### Note remarks

Test sheet : MB 5,7 n 14 : 26.03.90 Edition : 12.11.87 Replaces : ISO-4113 Test oil

Combination no. : 9 400 085 296

Injection pump

Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031

Governor

: RQV300...1425AB740-5 Governor design.

: 9 420 080 249 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M352 Engine

: 92.0 1st version kW Rated speed : 2850

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 14001st speed

Rack travel in mm : 9.20...9.30

Del.quantity cm3/: 5.8...5.9

100 s: (5.6...6.1)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/ : 1.0...1.6 100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1460 1st speed travel mm

: 8.40...8.60 : 950 2nd speed rom

: 5.20...5.50 travel mm

rpm : 775 3rd speed

: 4.10...4.60 travel mm

4th speed 550 rom

2.70...3.00 travel mm

: 300 5th speed rpm

: 0.70...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1460 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

58.5...59.5 Del.guantity

1000 : (56.5...61.5)

Spread : 3.00 cm3

: (5.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testina:

1st rack travel in: 8.20

rpm : 1460...1470 Speed

2nd rack travel in: 4.00

rpm : 1540...1570 Speed

4th rack travel in: 1700

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

: 100 Speed rpm

Minimum rack trave: 9.00

rpm : 300 Speed

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

rpm : 320...550 Speed

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 9.20...9.30

2nd speed

nd speed rpm : 500 Rack travel in m: 10.10...10.20

: 800 3rd speed rpm

Rack travel in m: 9.80...10.00

rpm : 1000 4th speed

Rack travel in m: 9.40...9.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed rpm

Del.quantity cm3/: 49.0...51.0

1000 s: (46.5...53.5)

rpm : 800 Speed

Del.quantity cm3/: 55.0...57.0

1000 s: (52.5...59.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.20

rpm : 1460...1470 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 71.0...81.0 1000 s: (68.0...84.0)

Rack travel in mm : 13.90...14.30

Remarks:

**APPLICATION** 

**Omnibus** 

A02

Note remarks

: FOR 6,6 L Test sheet : 24.10.90 Edition : 1.9.88 Replaces : ISO-4113 Test oil

Combination no. : 9 400 085 297

Injection pump

: PES6A95D410RS2758-1 Pump designation

: 9 400 084 015 EP type number

Governor

: RQV350...1200AB1220-Governor design.

: 9 420 080 252 Governer no.

Customer-spec. information : FORD FNH Customer

: 6,6 L TC Engine

: 138.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 : (2.90...3.10) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 6.7...6.9 Del.guantity cm3/: 2.0...2.4

100 s: (1.8...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 7.70...7.90 travel mm rpm : 700 2nd speed

: 4.10...4.50 travel mm

: 500 3rd speed rom

: 3.10...3.50 : 350 travel mm

4th speed rpm

: 1.70...2.10 travel mm : 270 5th speed rom

: 0.80...1.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1400

Rack travel in mm : 6.60...9.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

A03

Aneroid pressure h: 700 Del.quantity : 108.0...110.0 1000 : (106.0...112.0) : 3.50 Spread cm31000 : (6.00)RATED SPEED 1st version Control lever position degrees: 113...121 Testina: 1st rack travel in: 13.00 rpm : 1245...1255 Speed 2nd rack travel in: 4.00 Speed rpm: 1380...1410 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 67...75 Testina: : 100 Speed man Minimum rack trave: 10.00 rpm : 350 Rack travel in mm : 6.70...6.90 CONSTANT REGULATION rpm : 360...430 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm hPa : 700 Pressure : 14.00...14.10 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 9.70...9.90 2nd pressure hPa : 355

Rack travel in m: 11.30...11.40 3rd pressure hPa : 490 Rack travel in m: 13.00...13.40 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 : 850 Speed rpm Del.quantity cm3/: 103.0...107.0 1000 s: (101.0...109.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 53.0...55.0 1000 s: (51.0...57.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1245...1255 Speed STARTING FUEL DELIVERY

: 100 Speed man Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 350 rpm Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 20.0...24.0 1000 s: (18.0...26.0) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

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Note remarks

Test sheet : DEZ 6,1 d
Edition : 03.07.90
Replaces : 2.5.89
Test oil : ISO-4113

Combination no. : 9 400 085 301

Injection pump

Pump designation : PES6A85D41ORS2415 EP type number : 0 410 886 907

Governor

Governor design. : RQV300...1325AB1234-

11

Governer no. : 9 420 080 259

Customer—spec. information

Customer : DEUTZ ARGENTINA

Engine : BF 6L 913

1st version kW : 116.0 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1325

Rack travel in mm : 11.10...11.20

Del.quantity cm3!: 7.7...7.8

100 s: (7.5...8.0)

Spread cm3: 0.2

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/ : 1.5...1.9 100 s: (1.3...2.1)

Spread cm3 : 0.2 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400 travel mm : 8.80...8.90

2nd speed rpm : 300 travel mm : 0.80...1.20

3rd speed rpm : 600

travel mm : 2.90...3.30

4th speed rpm : 900 travel mm : 4.80...5.20

5th speed rpm : 1200

travel mm : 6.80...7.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1325

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 1325

Del.quantity : 77.0...78.0

1000 : (75.0...80.0)

: 2.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version Control Lever

rosition degrees: 110...118

Testing:

1st rack travel in: 10.10 Speed rpm : 1365...1375 2nd rack travel in: 4.00

rpm : 1465...1485 Speed

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 64...72

Testing:

rpm : 100 Speed Minimum rack trave: 9.50 rpm : 300

Rack travel in mm: 7.90...8.10

CONSTANT REGULATION

Speed rpm : 370...530

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 11.10...11.20 2nd speed rpm : 500 Rack travel in m: 12.10...12.20

3rd speed rpm : 800

Rack travel in m: 11.90...12.20

4th speed rpm : 1100

Rack travel in m: 11.50...11.70

START CUT-OUT

1/min: 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed rpm

Del.quantity cm3/: 74.0...76.0 1000 s: (71.5...78.5)

: 800 Speed **MC** 

Del.quantity cm3/: 77.5...79.5

1000 s: (75.0...82.0)

: 1100 rpm

Del.quantity cm3/: 78.0...80.0 1000 s: (75.5...82.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1365...1375 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Rack travel in mm : 19.00...21.00

Remarks:

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-3-4-2 Note remarks Test sheet : MB 4,0 h : 24.10.90 : 0-90-180-270 Edition Phasing : 24.11.89 Replaces Tolerance + - ° : 0.50 (0.75) Test oil : ISO-4113 Combination no. : 9 400 085 307 Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PES4A950410RS2774 : 9 400 084 019 rpm : 1300EP type number 1st speed Governor Rack travel in mm: 10.60...10.70 Governor design. : RQV300...1300AB1228-: 9 420 080 268 Del.quantity cm3/: 9.0...9.2 Governer no. 100 s: (8.8...9.4) Customer-spec. information Customer : MERCEDES-BENZ cm3 : 0.3Spread : OM 364 A Engine 100 s: (0.6) 1st version kW : 85.0 rpm : 300.0: 2600 2nd speed Rated speed Rack travel in mm : 6.9...7.1 Del.quantity cm3/: 0.6...1.2 TEST BENCH REQUIREMENTS 100 s: (0.4...1.4) Spread cm3 : 0.3Test oil 100 s: (0.5) inlet temp. °C : 38...42 Overflow valve (B) Setting of injection pump : 1 417 413 006 with governor GUIDE SLEEVE TRAVEL Inlet press., bar: 1.50 rpm : 300 1st speed : 0.80...1.30 Test nozzle holder travel mm : 0 681 343 009 rpm : 500 assembly 2nd speed : 2.30...2.80 travel mm rpm : 750 3rd speed Opening. : 172...175 : 4.10...4.30 pressure, bar travel mm rpm : 1500 4th speed : 8.50...8.60 travel mm Test lines : 1 680 750 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position Degree: -1 x Wall thickness Speed rpm: 1500 Rack travel in mm: 15.20...17.80 : 6.00X1.50X600 x Length mm (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values rpm : 1300 Speed Aneroid pressure h: 700 BEGINNING OF DELIVERY : 90.0...92.0 Test pressure, bar: 25...27 Del.quantity 1000 : (88.0...94.0)

: 3.20...3.30

: (3.15...3.45)

: 3.50

1000 : (6.00)

cm3

Spread

Prestroke mm

RATED SPEED

1st version Control Lever

position degrees: 107...115

Testing:

1st rack travel in: 9.60

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

rpm : 1490...1520 Speed

4th rack travel in: 1640

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 62...70

Testing:

: 100 Speed rom Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rom : 1300

Rack travel in m: 10.60...10.70

2nd speed rpm : 800

Rack travel in m: 11.00...11.10

4th speed rpm : 1000

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 700 Pressure

: 11.00...11.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 410

Rack travel in m: 10.80...10.90 3rd pressure hPa : 310 Rack travel in m: 10.10...10.30

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 800 Speed rpm

Del.quantity cm3/: 84.5...87.5 1000 s: (82.0...90.0) Aneroid pressure h: 700

Speed rpm : 1000 Del.quantity cm3/: 87.5...90.5

1000 s: (85.0...93.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 61.0...63.0 1000 s: (59.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 70.0...90.0

1000 s: (-)

Rack travel in mm : 12.90...13.10

Remarks:

80A

Note remarks

Test sheet : MMM 5,9 k Edition : 03.07.90

Replaces

Test cil : ISO-4113

Combination no. : 9 400 085 311

Injection pump

Pump designation : PES6A900320RS2718

: 9 400 084 003 EP type number

Governor

: RSV350...1250A0B1108 Governor design.

-2R

: 9 420 083 209 Governer no.

Customer-spec. information Customer · MWM

: TD 229 EC-06 Engine

: 121.5 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 046

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

: 1 680 750 014 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1 - 5 - 3 - 6 - 2 - 4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 3.00...4.00

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.8...8.9

100 s: (8.6...9.1)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 88.5...89.5

1000 : (86.5...91.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control Lever position degrees: 105...113 Testing: 1st rack travel in: 9.80 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1360...1390 Speed 4th rack travel in: 1450 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 4.7 Testina: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 Speed rpm : 395...455 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 10.80...10.90 2nd speed rpm : 500 Rack travel in m: 10.80...11.00 5th speed rpm : 400 Rack travel in m: 12.00...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 78.5...82.5 1000 s: (76.0...85.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed : 100 **Lbu** Rack travel in mm : 19.00...21.00 Remarks:

Combine-harvester

A10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 g 3 Test sheet : 26.03.90 Edition Replaces Test oil : ISO-4113 : 9 400 085 315 Combination no. Injection pump : PES6A95D410RS2772 Pump designation : 9 400 084 018 EP type number Governor Governor design. : 9 420 080 282 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 366 A 1st version kW : 125.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 006 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 : 1 680 750 015 Test Lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: RQV300...1300AB1066-BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 3.20...3.30 Prestroke mm : (3.15...3.35)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 11 BASIC SETTING rpm: 1300 1st speed Rack travel in mm : 10.40...10.50 Del.quantity cm3/: 8.9...9.1 100 s: (8.7...9.3) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 0.80...1.30 travel mm rpm : 500 2nd speed : 2.30...2.80 travel mm rpm : 750 3rd speed : 4.10...4.30 travel mm : 1500 4th speed rom : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1500 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 : 89.0...91.0 Del.quantity 1000 : (87.0...93.0) : 3.50 Spread cm3

1000

: (6.00)

RATED SPEED

1st version Control lever

position degrees: 105...113

Testing:

1st rack travel in: 9.40

Speed rpm: 1340...1350 2nd rack travel in: 4.00

Speed rpm: 1460...1490 4th rack travel in: 1630

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 62...70

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

rpm : 1300 1st speed

Rack travel in m: 10.40...10.50

rpm : 800 2nd speed

Rack travel in m: 10.90...11.00 4th speed rpm : 1000 Rack travel in m: 10.60...10.80

Aneroid/Altitude Compensator Test

1st version

Setting

rom : 500 hPa : 700 Speed rpm Pressure

: 10.90...11.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.40

2nd pressure hPa : 460

Rack travel in m: 10.30...10.40 3rd pressure hPa : 300

Rack travel in m: 9.60...9.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 800 Speed rpm

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

Speed rpm: 1000 Del.quantity cm3/: 88.0...91.0 1000 s: (85.5...93.5)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 52.0...54.0

1000 s: (50.0...56.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.40

: 1340...1350 Speed rom

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 95.0...115.0

Rack travel in mm : 14.50...14.70

Remarks:

Note remarks

Test sheet : MB 6,0 k Edition : 03.07.90

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 316

Injection pump

Pump designation : PES6A95D410RS2795 EP type number : 9 400 084 020

Governor

: RQV300...1400AB1065-Governor design.

18L

: 9 420 080 278 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 366

: 100.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 7.0...7.2

100 s: (6.8...7.4)

cm3 : 0.3Spread

100 s: (0.3)

rpm : 300.02nd speed Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6)

cm3 : 0.3

Spread 100 s: (0.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm rpm : 500

2nd speed

: 2.30...2.80 : 750 travel mm

3rd speed rpm

: 4.10...4.30 travel mm

4th speed : 1500 rpm

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 70.0...72.0 Del.quantity : (68.0...74.0) 1000

Spread : 3.50 cm3

: (3,50) 1000

RATED SPEED

1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 8.90 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 Speed rpm : 1535...1565 4th rack travel in: 1680 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 66...74 Testing: rpm : 100 Speed Minimum rack trave: 9.00 Speed rpm Rack travel in mm : 7.80...8.00 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1440...1450 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 90.0...105.0 1000 s: (87.0...108.0) Rack travel in mm : 15.40...15.60 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : FOR 6,6 o : 24.10.90 Replaces : ISO-4113 Test oil : 9 400 085 321 Combination no. Injection pump Pump designation : PES6A95D410RS2803 EP type number : 9 400 084 022 Governor Governor design. : RSV650...1250A8C2231 : 9 420 083 243 Governer no. Customer-spec. information

: FORD (FNH) Customer Engine : 6,6 L

: 101.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm: 1220

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 8.1...8.3

100 s: (7.8...8.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 650.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 0.7...1.1 100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1220 : 81.0...83.0 Del.quantity 1000 : (78.5...85.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever position degrees: 97...105 Testina: 1st rack travel in: 10.00 Speed rpm: 1265...1270 2nd rack travel in: 4.00 rpm : 1295...1300 Speed 4th rack travel in: 1420 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring : 650 rpm Rack travel in mm: 6.3 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 650 Speed Rack travel in mm : 6.70...6.90 Rack travel in mm: 2.00 Speed : 700...760 rpm FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 69.0...73.0 1000 s: (67.0...75.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1265...1270 STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (-) Rack travel in mm: 20.00...21.00 LOW IDLE

Speed rpm : 650 Rack travel in mm : 6.70...6.90 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) Spread cm3: 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Combine—harvester

Note remarks

Test sheet : FOR 6,6 o 1 : 24.10.90 Edition

Replaces

: ISO-4113 Test oil

: 9 400 085 322 Combination no.

Injection pump

Pump designation : PES6A95D410RS2803

: 9 400 084 022 EP type number

Governor

: RSV650...1250A8C2231 Governor design.

Governer no. : 9 420 083 244

Customer-spec. information

: FORD (FNH) Customer

: 6,6 L Engine

1st version kW : 112.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25 : (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm: 1220

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 9.1...9.3

100 s: (8.8...9.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 650.0 2nd speed Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1220

: 91.0...93.0 Del.quantity

1000 : (88.5...95.5) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 97...105 Testina: 1st rack travel in: 10.90 rpm : 1265...1270 Speed 2nd rack travel in: 4.00 rpm : 1300...1305 Speed 4th rack travel in: 1420 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 650 Rack travel in mm: 6.3 Testina: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 650 Speed Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 : 700...760 Speed rom FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed Del.quantity cm3/: 77.0...81.0 1000 s: (75.0...83.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1265...1270 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (-) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 650 Speed Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 7.0...11.0

1000 s: (4.5...13.5)

Spread cm3 : 3.50 1000 s: (5.50)

:

Remarks:

APPLICATION

Combine-harvester

Note remarks

: FOR 6,6 o 2 Test sheet : 24.10.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 323

Injection pump

Pump designation : PES6A95D410RS2803

EP type number : 9 400 084 022

Governor

: RSV650...1250A8C2231 Governor design.

-5L

: 9 420 083 245 Governer no.

Customer spec. information

: FORD (FNH) Customer

Engine : 6,6 L

: 123.8 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25 : (3.10...3.30) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm: 1220

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 9.8...10.0

100 s: (9.5...10.2)

cm3 : 0.3 Spread

100 s: (0.6)

2nd speed rpm : 650.0
Rack travel in mm : 6.7...6.9
Del.quantity cm3/ : 0.7...1.1

100 s: (0,4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1220 Speed

: 98.0...100.0 Del.quantity

1000 : (95.5...102.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 97...105

Testing:

1st rack travel in: 11.50

Speed rpm: 1265...1270 2nd rack travel in: 4.00

Speed rpm : 1300...1305 4th rack travel in: 1420

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever position degrees: 72...80

Setting point w/out bumper spring

rpm : 650 Rack travel in mm: 6.3

Testina:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 650 Rack travel in mm : 6.70...6.90

Rack travel in mm : 2.00

rpm : 700...760 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 800 Speed

Del.quantity cm3/: 83.0...87.0 1000 s: (81.0...89.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 1265...1270 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)

Spread

cm3 : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

A20

# BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FOR 7,8 L : 24.10.90 Edition Replaces : ISO-4113 Test oil Combination no. : 9 400 085 324 Injection pump Pump designation : PES6A95D41CRS2801 : 9 400 084 023 EP type number Governor Governor design. : RQV350...1300AB1255L Governer no. : 9 420 080 294 Customer-spec. information : FORD-NEW HOLLAND Customer : 7.81 - TCFraine

agne	. 7.0 2 70
1st version kW Rated speed	: 158.0 : 2600
TEST BENCH REQUIREMENTS	
Test oil inlet temp. °C	: 3842

: 1 457 413 010 Inlet press., bar: 1.50

Test nozzle holder

Overflow valve

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 9.4...9.6

100 s: (9.1...9.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 1.3...1.9 100 s: (1.1...2.0) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed

: 8.50...8.60 rpm : 350 travel mm

2nd speed

: 1.10...1.80 travel mm rpm : 500 3rd speed

travel mm

: 2.70...3.10 rpm : 700 4th speed

: 3.50...3.90 travel mm

: 1000 5th speed rpm : 4.90...5.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1390 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 310 Rack travel in m: 12.00...12.20 3rd pressure hPa : 430 1st version rpm : 1300 Speed Aneroid pressure h: 900 Del.quantity : 94.0...98.5) Rack travel in m: 12.50...12.60 : 3.50 cm3 START CUT-OUT Spread 1000 : (6.00) 1/min: 290 (310) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 110...118 1st version Aneroid pressure h: 900 : 850 Testina: Speed rom Del.quantity cm3/: 95.5...99.5 1000 s: (93.5...101.5) 1st rack travel in: 11.30 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Aneroid pressure h: 900 : 1465...1495 : 1100 Speed Speed rpm rpm Del.quantity cm3/: 95.5...98.5 4th rack travel in: 1600 1000 s: (93.0...101.0) rpm : 0.00...1.00Speed Aneroid pressure h: -: 500 LOW IDLE 1 Speed rpm Del.quantity cm3/: 75.0...77.0 1000 s: (72.5...79.5) Control Lever position degrees: 66...74 Testing: Speed : 100 BREAKAWAY rpm Minimum rack trave: 9.00 rpm : 350 Speed 1st version Rack travel in mm : 6.40...6.60 1mm rack travel less than full load rack tr: 11.30 CONSTANT REGULATION rpm : 370...440 rpm : 1340...1350 Speed Speed TORQUE CONTROL STARTING FUEL DELIVERY : 0.40 Dimension a mm Torque control curve - 1st version : 1300 : 100 1st speed rpm Speed **rpm** Del.guantity cm3/: 155.0...175.0 Rack travel in m: 12.30...12.40 rpm : 850 1000 s: (152.0...178.0) 2nd speed Rack travel in mm : 19.00...21.00 Rack travel in m: 12.70...12.80 4th speed rpm : 1100 Rack travel in m: 12.50...12.60 LOW IDLE rpm : 350 Aneroid/Altitude Speed Rack travel in mm : 6.40...6.60 Compensator Test Del.quantity cm3/: 13.0...19.0 1000 s: (11.5...20.5) 1st version Spread : 3.50 cm3 Setting 1000 s: (5.50) Speed : 500 rom hPa : 900 Pressure Remarks: : 12.70...12.80 Rack travel mm Set shutoff stop 1.5...2.0 mm before Measurement 1/min: 500 Speed shutoff. 1st pressure hPa : -

Rack travel in m: 11.60...11.90

Note remarks

Test sheet : FOR 7,8 m : 24.10.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 325

Injection pump

Pump designation : PES6A95D41ORS2800 : 9 400 084 024 EP type number

Governor

Governor design. : RQV375...1300AB1202-

: 9 420 080 295 Governer no.

Customer-spec. information

Customer : FORD-NEW HOLLAND

: 7.8 L - NA Engine

: 125.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 : (3.10...3.30) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 375.0 2nd speed

Rack travel in mm: 6.9...7.1

Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1345 1st speed

: 8.50...8.60 travel mm

: 350 2nd speed rpm

: 1.30...1.60 travel mm : 700

3rd speed rpm

: 4.10...4.50 travel mm

: 1100 4th speed rpm

: 6.30...6.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1345 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed : 90.5...92.5 Del.quantity 1000 : (88.5...94.5) cm3 : 3.50 Spread cms : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 11.50 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1455...1485 Speed 4th rack travel in: 1600 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 68...76 Testing: Speed rpm Minimum rack trave: 9.50 rom : 375 Speed Rack travel in mm : 6.90...7.10 CONSTANT REGULATION rpm : 465...535 Speed START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 84.5...87.5 1000 s: (82.0...90.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1340...1350 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 115.0...129.0 1000 s: (-)

Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 375 Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 10.0...16.0 1000 s: (8.5...17.5) cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,0 m : 24.10.90 Edition Replaces : ISO-4113 Test oil : 9 400 085 327 Combination no. Injection pump Pump designation : PES6A95D41ORS2772 : 9 400 084 018 EP type number Governor Governor design. : RSV350...1250A0B1150 -4L : 9 420 083 246 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM 366 A 1st version kW : 121.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening | : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_

: 0-60-120-180-240-300 Phasina : 0.50 (0.75) Tolerance + - ° BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 9.60...9.70 Del.guantity cm3/: 8.1...8.3 100 s: (7.9...8.5) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0) cm3 : 0.3 Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Governor spring pre-tension Click setting x : 3.25 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed : 81.0...83.0 Del.quantity 1000 : (79.0...85.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 99...107 Testing: 1st rack travel in: 8.60 Speed rpm : 1290...1300 2nd rack travel in: 4.00 : 1325...1355 Speed rpm 4th rack travel in: 1500

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 3.20...3.30

: (3.15...3.35)

rpm : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 6.3 Testina: Speed rom Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 Speed rpm : 420...480 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 9.60...9.70 2nd speed rpm : 500 Rack travel in m: 9.60...9.80 5th speed rpm : 400 Rack travel in m: 10.80...11.40 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 72.0...76.0 1000 s: (70.0...78.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.60 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 95.0...115.0 1000 s: (92.0...118.0) Rack travel in mm : 13.90...14.10 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 12.0...18.0 1000 s: (10.0...20.0)

cm3 : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

Spread

### Note remarks

Test sheet : SCA 11,0 v5 : 05.12.90 Edition : 1.9.88 Replaces Test oil : ISO-4113

Combination no. : 9 400 087 297

Injection pump

Pump designation : PE6P120A720RS7004 : 0 412 626 801 EP type number

Governor

: RQ900PA695 Governor design. : 9 420 080 167 Governer no.

Customer-spec. information

: SAAB - SCANIA Customer

: DS 11 Engine

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

## BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

## GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

Spread cm3: 6.00

> 1000 : (9.00)

### RATED SPEED

#### 1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 11.80 rpm : 900...905 Speed 2nd rack travel in: 4.00 Speed rpm : 941...955

4th rack travel in: 1000 rom : 0.00...1.00Speed

#### **BREAKAWAY**

1st version

1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 900...905 Speed

STARTING FUEL DELIVERY

HIGH IDLE

1st version Rack travel in mm : 4.90...5.10 Spread cm3 : 4.00 1000 s: (7.00)

Remarks:

**APPLICATION** 

Generator

Note remarks

Test sheet : VOL 10,0 s4 : 26.03.90 : 2.5.89 Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 346

Injection pump

Pump designation : PE6P120A320RS3186 EP type number : 0 411 826 756

Governor

: RQV250...1025PA657-1 Governor design.

: 0 421 813 592 Governer no.

Customer-spec. information : VOLVO Customer

: TD 102 F Engine

: 220.0 1st version kW Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70 (2.55...2.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 4.2...4.4 Del.quantity cm3/ : 1.7...2.2 100 s: (1.4...2.4)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm

rpm : 500 2nd speed

: 4.10...4.90 travel mm

rpm : 700 3rd speed

: 6.30...6.70 travel mm

4th speed rpm

: 6.30...6.70 travel mm

900

1025 5th speed rpm

: 7.30...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1000

: 197.0...199.0 Del.quantity

1000 : (194.0...202.0)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 10.40 Speed rpm : 1055...1065

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed rpm : 100 Minimum rack trave: 5.70 rpm : 250

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 1000 Pressure

Rack travel mm : 11.40...11.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 80

Rack travel in m: 9.00...9.10

3rd pressure hPa : 400

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity\_cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 1055...1065 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 17.0...22.0

1000 s: (14.5...24.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 10,0 q9 Edition : 26.03.90 : 1.9.88 Replaces Test oil : ISO-4113 Combination no. : 9 400 087 368 Injection pump Pump designation : PE6P110A320RS3108V EP type number : 0 411 816 737 Governor Governor design. : RQV250...1100PA589-1 : 9 420 080 166 Governer no. Customer-spec. information : VOLVO Customer : THD 101 FD Engine : 210.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar : 1 680 750 015 Test Lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing 1st speed Spread Spread BEGINNING OF DELIVERY Test pressure, bar: 25...27 Speed Del.quantity : 180.0...185.0) : 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - \* Time to cyl. no. : 1 BASIC SETTING rpm: 700 Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 18.0...18.2 100 s: (17.7...18.5) cm3 : 0.4100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6) cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rom : 250 1st speed : 1.10...1.30 travel mm rpm : 500 2nd speed : 4.10...4.90 travel mm rpm : 700 3rd speed : 6.30...6.70 travel mm : 950 4th speed rpm : 6.30...6.70 travel mm : 1100 5th speed rpm : 7.00...7.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Rack travel in mm : 15.20...17.80 FUIL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Aneroid pressure h: 1200

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testina:

1st rack travel in: 12.70

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1240...1270

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed : 100 rpm Minimum rack trave: 6.80 : 250 Speed MCT

Rack travel in mm: 5.30...5.50
Rack travel in mm: 2.00
Speed rpm: 345...405

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa : 1200

: 13.70...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.90

2nd pressure hPa : 300

Rack travel in m: 10.00...10.10

3rd pressure hPa : 870

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed : 700 rpm

Del.quantity cm3/: 106.0...108.0 1000 s: (103.0...111.0)

BREAKAWAY

B04

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

**APPLICATION** 

**Omnibus** 

Note remarks

Test sheet : SCA 14,2 L Edition : 24.11.89

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 371

Injection pump

Pump designation : PE8P120A920/4LS7003

EP type number : 0 412 628 801

Governor

Governor design. : RSV350...900P7/481

: 9 420 082 320 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 11.70 rpm : 920...925 Speed

2nd rack travel in: 4.00

Speed rpm : 960...970 4th rack travel in: 1050

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 67...75 Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 4.9

Speed rpm : 350 Rack travel in mm : 5.30...5.50

Rack travel in mm : 2.00 rpm : 400...460 Speed

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 920...925 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...290.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 14,2 j : 26.03.90 Edition : 2.5.89 Replaces Test oil : ISO-4113 : 9 400 087 372 Combination no. Injection pump Pump designation : PE8P120A920/4LS7002T : 9 400 087 054 EP type number Governor Governor design. : RQV200...1000PA547-2 : 9 420 080 238 Governer no. Customer-spec. information : SAAB-SCANIA Customer : DSC 14 07 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 1- 2- 7- 3- 4- 5-Firing order : 0-45-90-135-180-225-Phasing 270-315 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 18.7...18.9 100 s: (18.4...19.2) Spread cm3 : 0.6100 s: (0.9) rpm : 225.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 1.0...1.6 100 s: (-) Spread cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 10401st speed : 8.40...8.50 travel mm rpm : 225 2nd speed : 1.00...1.60 travel mm rpm : 350 : 2.50...2.90 3rd speed travel mm 4th speed rpm : 650 : 4.60...4.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 600 Del.quantity : (187.0...192.0)

cm3

Spread

: 6.00

1000 : (9.00)

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 5.00...5.10

: (4.95...5.15)

#### RATED SPEED

1st version Control lever

position degrees: 56...64

Testina:

1st rack travel in: 12.20

Speed rpm: 1040...1050 2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 6...14

Testing:

Speed : 100 rpm Minimum rack trave: 5.90 rpm : 225 Speed

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00 Speed rpm : 310...370

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man hPa : 600 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.30...11.40

2nd pressure hPa : 355
Rack travel in m: 12.50...12.60
3rd pressure hPa : 260
Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600 : 1000 Speed rpm

Del.quantity cm3/: 183.0...191.0

1000 s: (181.0...193.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 137.0...141.0 1000 s: (135.0...143.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

: 4.05...4.15 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.00...4.20) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : FOR 6,6 I Test sheet : 05.12.90 Edition Replaces : 8.1.88 Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 9 400 087 375 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 Injection pump Pump designation : PES6P110A720RS3194 : 9 400 087 055 BEGINNING OF DELIVERY DIFFERENCE EP type number Governor Governor design. : RQV350...1300PA863-5 betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 2.00...3.00 : 9 420 080 240 Governer no. Customer-spec. information BASIC SETTING Customer : FORD FNH rpm: 1300 : 6.6 LTC Engine 1st speed Rack travel in mm : 14.60...14.70 : 126.0 1st version kW : 2600 Rated speed Del.quantity cm3/: 11.7...11.9 TEST BENCH REQUIREMENTS 100 s: (11.5...12.1) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 9 401 087 403 rpm : 350.02nd speed Rack travel in mm: 8.6...8.8 Inlet press., bar: 1.50 Del.quantity cm3/: 2.0...2.4 100 s: (1.7...2.6) Test nozzle holder : 1 688 901 017 Spread cm3 : 0.3assembly 100 s: (0.5) Opening pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate diameter mm : 0,6 GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 0.90...1.30 travel mm : 1 680 750 015 rpm : 500 Test lines 2nd speed travel mm : 2.60...3.00 rpm : 800 Outside diameter 3rd speed : 4.30...4.70 x Wall thickness travel mm : 6.00X1.50X600 4th speed : 1000 x Length mm rpm 5.20...5.60 travel mm rpm : 1450 (A) Injection pump setting values 5th speed : 8.50...8.60 Insp. values in parentheses travel mm Set equal delivery quant. GUIDE SLEEVE POSITION per values \_\_\_ Control-lever position BEGINNING OF DELIVERY Degree: -1

rpm : 1540

Rack travel in mm : 8.00...0.00

Speed

Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP 1/min : 290 (310) Speed 1st version rpm : 1300 FUEL DELIVERY CHARACTERISTICS Speed Aneroid pressure h: 800 : 117.0...119.0 Del.quantity 1000 : (115.0...121.0) 1st version cm3 : 5.00 1000 : (9.00) Aneroid pressure h: 800 Spread : 900 Speed rpm Speed rpm : 900 Del.quantity cm3/ : 100.5...104.5 1000 s: (98.5...106.5) RATED SPEED Aneroid pressure h: rpm : 500 1st version Speed Del.quantity cm3/ : 57.0...59.0 Control Lever 1000 s: (55.0...61.0) position degrees: 44...52 Testina: 1st rack travel in: 13.60 BREAKAWAY rpm : 1360...1370 Speed 1st version 2nd rack travel in: 4.00 : 1520...1550 1mm rack travel less than Speed nom 4th rack travel in: 1650 rpm : 0.00...1.00full load rack tr: 13.60 Speed rpm : 1360...1370 Speed LOW IDLE 1 Control lever STARTING FUEL DELIVERY position degrees: 13...21 Speed rpm : 100 Del.quantity cm3/: 120.0...140.0 Testing: Speed nom : 100 Minimum rack trave: 12.00 1000 s: (-) rpm : 350 Rack travel in mm : 20.00...21.00 Speed Rack travel in mm : 8.60...8.80 Rack travel in mm : 2.00 LOW IDLE rpm : 535...595 Speed Speed : 350 rpm Rack travel in mm : 8.60...8.80 Del.quantity cm3/: 20.0...24.0 CONSTANT REGULATION : 430...500 Speed rom 1000 s: (17.5...26.5) cm3 : 3.50 Aneroid/Altitude Spread 1000 s: (5.50) Compensator Test Remarks: 1st version Setting : 500 Speed rpm Pressure hPa : 800 Rack travel mm : 14.60...14.70 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.60...12.70 2nd pressure hPa : 580 Rack travel in m: 13.40...13.60 3rd pressure hPa : 620 Rack travel in m: 14.00...14.10

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.25...4.35 : (4.20...4.40) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : FOR 7,8 d : 26.03.90 : 2.5.89 Test sheet Edition Replaces : 0-60-120-180-240-300 : ISO-4113 Phasina Test oil Combination no. : 9 400 087 379 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 Injection pump Pump designation : PES6P110A720RS3150 : 9 400 087 046 EP type number BASIC SETTING Governor Governor design. : RQV350...1200PA863 rpm: 1200 1st speed : 9 420 080 242 Governer no. Rack travel in mm : 13.00...13.10 Customer-spec, information Del.quantity cm3/: 12.7...12.9 : FORD (FNH) Customer 100 s: (12.5...13.1) : 7.8 L TC Engine : 138.0 Spread cm3 : 0.51st version kW : 2400 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Rack travel in mm: 8.0...8.2 Test cil inlet temp. °C : 38...42 Del.quantity cm3/: 2.3...2.7 100 s: (2.0...2.9) Overflow valve cm3 : 0.3Spread : 9 401 087 403 100 s: (0.5) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder assembly : 1 688 901 017 GUIDE SLEEVE TRAVEL rpm : 1360 1st speed : 8.40...8.50 **Opening** travel mm rpm : 1000 : 207...210 2nd speed pressure, bar travel mm : 5.50...5.90 rpm : 800 Orifice plate 3rd speed : 4.40...4.80 diameter mm : 0.6 travel mm rpm : 500 4th speed : 2.60...3.00 travel mm rpm : 300 Test lines : 1 680 750 015 5th speed : 0.90...1.30 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 Control-Lever position x Length mm Degree: -1 rpm : 1440 (A) Injection pump setting values Speed Rack travel in mm : 6.70...9.30 Insp. values in parentheses Set equal delivery quant.

FULL LOAD DELIV. AT FULL LOAD STOP

rpm : 1200

1st version

Aneroid pressure h: 600

Speed

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 127.5...129.5 Del.quantity 1000 : (125.5...131.5) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 42...50 Testina: 1st rack travel in: 12.00 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1385...1415 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 13...21 Testina: Speed man Minimum rack trave: 12.00 : 350 rom Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL : 0.80 Dimension a mm Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 13.00...13.10 rpm : 750 2nd speed Rack travel in m: 13.80...13.90 rom : 900 3rd speed Rack travel in m: 13.70...13.90 rpm : 1100 4th speed Rack travel in m: 13.00...13.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 man hPa : 600 Pressure : 13.80...13.90 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 12.10...12.30 2nd pressure hPa : 267

Rack travel in m: 12.60...12.70 3rd pressure hPa : 335 Rack travel in m: 13.30...13.50 START CUT-OUT Speed 1/min : 290 (310) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 Speed rpm : 850 Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0) Aneroid pressure h: -Speed rpm Del.guantity cm3/: 74.5...76.5 1000 s: (72.5...78.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1260...1270 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (-) Rack travel in mm : 20.00...21.00 LOW IDLE : 350 Speed rpm Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 23.0...27.0 1000 s: (20.5...29.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

: 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.20...4.40) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : FOR 7,8 e 2 : 26.03.90 Edition : 2.5.89 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing Combination no. : 9 400 087 383 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3151 : 9 400 087 047 EP type number BASIC SETTING Governor Governor design.: RQV350...1200PA863-4 1st speed rpm: 1200 : 9 420 080 246 Governer no. Rack travel in mm : 14.50...14.60 Customer-spec. information Del.guantity cm3/: 14.9...15.1 : FORD (FNH) Customer 100 s: (14.7...15.3) : 7.8 L TC Engine : 179.0 cm3 : 0.51st version kW Spread Rated speed : 2400 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm: 8.0...8.2 Test oil Del.quantity cm3/: 2.4...2.8 inlet temp. °C : 38...42 100 s: (2.1...3.0) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 9 401 087 403 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 1360 1st speed travel mm : 8.40...8.50 Opening : 207...210 1000 2nd speed pressure, bar rom : : 5.50...5.90 rpm : 800 travel mm 3rd speed Orifice plate diameter mm : 0,6 travel mm : 4.40...4.80 rpm : 500 4th speed : 2.60...3.00 travel mm rpm : 300 Test Lines : 1 680 750 015 5th speed : 0.90...1.30 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 Control-lever position x Length mm Degree: -1 rpm : 1440 (A) Injection pump setting values Speed Rack travel in mm : 6.70...9.30 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values \_\_\_\_ BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 1200

Aneroid pressure h: 700

: 149.5...151.5 Del.quantity 1000 : (147.5...153.5) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control Lever position degrees: 44...52 Testing: 1st rack travel in: 13.50 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1520 Speed rpm: 0.00...1.00 LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed rpm : 100 Minimum rack trave: 12.00 rpm : 350 Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 14.50...14.60 2nd speed rpm : 750 Rack travel in m: 15.00...15.10 3rd speed rpm : 910 Rack travel in m: 14.90...15.10 : 1040 4th speed rpm Rack travel in m: 14.50...14.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 15.00...15.10 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 12.00...12.20

Rack travel in m: 13.30...13.40 3rd pressure hPa : 532 Rack travel in m: 14.30...14.50 START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 850 Speed rpm Del.quantity cm3/: 134.5...138.5 1000 s: (132.5...140.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 72.0...74.0 1000 s: (70.0...76.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 1260...1270 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (-) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm: 350
Rack travel in mm: 8.00...8.20
Del.quantity cm3/: 24.0...28.0 1000 s: (21.5...30.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

2nd pressure hPa : 430

Note remarks

: MB 10,0 r 1 Test sheet : 24.10.90 Edition : 24.11.89 Replaces : ISO-4113 Test oil

: 9 400 087 387 Combination no.

Injection pump

Pump designation : PES5P120A720LS7174

EP type number : 0 412 725 806

Governor

Governor design. : RQ300/1050PA774-2 : 0 421 801 450 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M449 A Engine

: 184.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 5

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.4...7.0

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

: 196.0...198.0 Del.quantity 1000 : (193.0...201.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm : 20.0

Testina: 1st rack travel in: 13.40 Speed rpm : 1095...1110 2nd rack travel in: 4.00 : 1160...1190 Speed rom 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm Rack travel in mm: 6.7 Testing: Speed : 200 rpm Minimum rack trave: 8.70 : 300 **PDM** Rack travel in mm : 6.40...7.00 Rack travel in mm : 2.00 : 370...410 Speed rom TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version : 1050 1st speed rpm Rack travel in m: 14.40...14.60 2nd speed rpm : 750 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 650 Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.50...13.70 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 \* 4th pressure hPa : 850 Rack travel in m: 14.60...14.80 5th pressure hPa : Rack travel in m: 11.90...12.20

1st version Aneroid pressure h: 1200 : 1050 Speed rpm Del.quantity cm3/: 208.0...211.0 1000 s: (205.0...214.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1200 Speed : 750 rpm Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 150.0...152.0 1000 s: (147.0...155.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : 1095...1110 STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

: 4.65...4.75 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.60...4.80) Note remarks Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : FOR 7,8 f : 26.03.90 Test sheet Edition Replaces : 1.9.88 : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 9 400 087 388 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3215 : 9 400 087 060 EP type number BASIC SETTING Governor Governor design. : RQV350...1200PA863-6 rpm: 1200 1st speed : 9 420 080 257 Governer no. Rack travel in mm : 13.30...13.40 Customer-spec. information Del.quantity cm3/: 17.2...17.4 Customer : FORD (FNH) 100 s: (17.0...17.6) : 7.8 L TC Engine 1st version kW : 201.3 cm3 : 0.5Spread Rated speed : 2400 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.02nd speed Rack travel in mm : 6.3...6.5 Test oil inlet temp. °C Del.quantity cm3/: 1.7...2.1 : 38...42 100 s: (1.5...2.3) Overflow valve cm3 : 0.3Spread 100 s: (0.5) : 9 401 087 403 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly rpm : 1360 1st speed travel mm : 8.40...8.50 Openina (1997) rpm : 1000 : 207...210 2nd speed pressure, bar : 5.50...5.90 travel mm rpm : 800 Orifice plate 3rd speed : 0,6 travel mm : 4.40...4.80 diameter mm rpm : 500 4th speed : 2.60...3.00 travel mm : 300 Test lines : 1 680 750 015 5th speed rpm travel mm : 0.90...1.30 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x600 Control-lever position Degree: -1 rpm : 1505 (A) Injection pump setting values Speed Rack travel in mm : 6.70...9.30 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values \_\_\_\_ BEGINNING OF DELIVERY 1st version

rpm : 1200

Aneroid pressure h: 900

Speed

Test pressure, bar: 25...27

Del.quantity : 172.0...174.0 1000 : (170.0...176.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 95...103 Testing: 1st rack travel in: 12.30 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1395...1425 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 59...67 Testina: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 350 Speed Rack travel in mm : 6.30...6.50 CONSTANT REGULATION rpm : 390...460 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure : 13.30...13.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 665 Rack travel in m: 12.50...12.60 3rd pressure hPa : 405 Rack travel in m: 10.90...11.30

START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version **B18** 

Aneroid pressure h: 900 rpm : 850 Speed Del.quantity cm3/: 149.5...153.5 1000 s: (147.5...155.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 75.5...77.5 1000 s: (73.0...80.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1260...1270 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 17.0...21.0 1000 s: (15.5...23.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before

shutoff.

: 4.25...4.35 : (4.20...4.40) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks Test sheet : FOR 7,8 q Edition : 03.07.90 Replaces : 24.11.89 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 : 9 400 087 412 Combination no. Tolerance + - \* : 0.50 (0.75) Time to cyl. no. : 1 Injection pump Pump designation : PES6P110A720RS3228 : 9 400 087 065 BASIC SETTING EP type number Governor rpm: 1200 Governor design.: RQV350...1200PA863-7 1st speed : 9 420 080 270 Governer no. Rack travel in mm : 13.60...13.70 Customer-spec. information : FORD (FNH) Del.quantity cm3/: 13.7...13.9 Customer : 7.8L TC 100 s: (13.5...14.1) Engine : 138.0 Spread cm3 : 0.41st version kW Rated speed : 2400 100 s: (0.7) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 7.8...8.0 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 2.2...2.6 100 s: (1.9...2.8) Overflow valve Spread cm3 : 0.4: 9 401 087 403 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL rpm : 1360 1st speed **Opening** travel mm : 8.40...8.50 : 1000 pressure, bar : 207...210 2nd speed rpm 5.50...5.90 travel mm rpm : 800 3rd speed Orifice plate diameter mm : 0,6 travel mm : 4.40...4.80 rpm : 500 4th speed : 2.60...3.00 travel mm rpm : 300 Test lines : 1 680 750 015 5th speed : 0.90...1.30 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X600 Control-lever position x Length mm Degree: -1 rpm : 1490 Speed (A) Injection pump setting values Rack travel in mm : 6.70...9.30 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version rpm : 1200 Test pressure, bar: 25...29 Speed

Aneroid pressure h: 700

Del.quantity : 137.5...139.5 1000 : (135.5...141.5) : 4.00 cm3 Spread 1000 : (7.50)RATED SPEED 1st version Control Lever position degrees: 43...51 Testing: 1st rack travel in: 12.60 Speed rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1380...1410 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 12...20 Testing: : 100 Speed COM Minimum rack trave: 9.50 : 350 rpm Rack travel in mm : 7.80...8.00 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 13.60...13.70 and speed rpm : 750 Rack travel in m: 13.90...14.00 2nd speed rpm : 1050 3rd speed Rack travel in m: 13.60...13.70 rpm : 900 4th speed Rack travel in m: 13.90...14.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : 700 Pressure : 13.90...14.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.00...12.20

Rack travel in m: 12.60...12.70 3rd pressure hPa : 400 Rack travel in m: 13.30...13.70 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 750
Del.quantity cm3/: 119.0...123.0
1000 s: (117.0...125.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 71.0...75.0 1000 s: (69.0...77.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 1245...1255 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm Rack travel in mm : 7.80...8.00 Del.quantity cm3/: 22.0...26.0 1000 s: (19.5...28.5) cm3 : 4.50Spread 1000 s: (7.50) Remarks: : Set shutoff stop 1.5...2.0 mm before

•

shutoff.

2nd pressure hPa : 325

Note remarks

Test sheet : FOR 7,8 i 3 Edition : 24.10.90

Replaces : -

Test oil : ISO-4113

Combination no. : 9 400 087 418

Injection pump

Pump designation : PES6P120A720RS3234

EP type number : 9 400 087 068

Governor

Governor design. : RQV350...1150PA923-1

K

Governer no. : 9 420 080 273

Customer spec. information

Customer : FORD (FNH)

Engine : 7.8 Ltr

1st version kW : 179.0

Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.35...2.45

: (2.30...2.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 16.9...17.1

100 s: (16.6...17.4)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 2.6...3.2

100 s: (2.4...3.4)

Spread cm3: 0.5

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 9.50...9.70

2nd speed rpm : 1000

travel mm : 7.80...8.00

3rd speed rpm: 800

travel mm : 6.40...6.80

4th speed rpm : 450

travel mm : 3.50...3.70

5th speed rpm : 350

travel mm : 2.00...2.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1150 Aneroid pressure h: 900

Del.quantity : 169.0...171.0

1000 : (166.0...174.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 12.80

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

Speed rpm : 1340...1370

4th rack travel in: 1450

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 61...69

Testing:

Speed rpm : 275 Minimum rack trave: 7.20

rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 13.80...13.90

2nd speed rom : 750

Rack travel in m: 12.20...12.40

3rd speed rpm : 550

Rack travel in m: 11.20...11.60

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1150 Speed COM hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 1150 Speed

1st pressure hPa : -

Rack travel in m: 7.90...8.30 2nd pressure hPa : 365 Rack travel in m: 9.40...9.50

3rd pressure hPa : 635

Rack travel in m: 12.40...12.80

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm

Del.quantity cm3/: 172.0...178.0

1000 s: (169.0...181.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 108.5...112.5 1000 s: (106.5...114.5)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (131.0...179.0)

Rack travel in mm : 10.80...11.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/: 26.5...32.5
1000 s: (24.5...34.5)

cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

#### Note remarks

Test sheet : FOR 7,8 i : 24.10.90 : 3.7.90 Edition Replaces Test oil : ISO-4113

Combination no. : 9 400 087 419

Injection pump

Pump designation : PES6P120A720RS3234

: 9 400 087 068 EP type number

Governor

: RQV350...1150PA923-2 Governor design.

: 9 420 080 274 Governer no.

Customer-spec. information Customer : FORD (FNH)

: 7.8 Ltr Engine

1st version kW : 156.6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.35...2.45 Prestroke mm : (2.30...2.50)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rbm: 1150

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 2.6...3.2 100 s: (2.4...3.4)

cm3 : 0.5

Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 9.50...9.70 travel mm

: 1000 2nd speed rom

travel mm : 7.80...8.00

: 800 3rd speed rpm

: 6.40...6.80 travel mm

: 450 4th speed rpm

: 3.50...3.70 travel mm

: 350 5th speed rom

: 2.00...2.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 900

Del.quantity : 150.5...163.5)

cm3 : 5.00 Spread

1000 : (9.00)

## RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 12.50 Speed rpm : 1210...1220

2nd rack travel in: 4.00

rpm : 1315...1345 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 62...70

Testing:

Speed mom Minimum rack trave: 7.00

rpm : 350 Speed

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1150
Rack travel in m: 13.50...13.60
2nd speed rpm : 750
Rack travel in m: 12.80...13.00

rpm : 550 3rd speed

Rack travel in m: 11.40...11.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 1150 Speed rom Pressure hPa : 900

Rack travel mm : 13.50...13.60

Measurement

1/min: 1150 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 300

Rack travel in m: 9.80...9.90

3rd pressure hPa : 500 Rack travel in m: 11.90...12.30

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm

Del.quantity cm3/: 174.0...180.0 1000 s: (171.0...183.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 106.5...110.5 1000 s: (104.5...112.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 145.0...185.0 1000 s: (141.0...189.0)

Rack travel in mm : 11.20...12.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 26.5...32.5 1000 s: (24.5...34.5)

cm3 : 5.00 1000 s: (8.00) Spread

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : FOR 7,8 i 2 Edition : 24.10.90 : 3.7.90 Replaces : ISO-4113 Test oil

Combination no. : 9 400 087 420

Injection pump

: PES6P120A720RS3234 Pump designation

EP type number : 9 400 087 068

Governor

Governor design. : RQV350...1150PA923-3

: 9 420 080 275 Governer no.

Customer-spec. information Customer : FORD (FNH)

: 7.8 Ltr Engine

1st version kW : 167.8 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 689 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.35...2.45 : (2.30...2.50) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.5Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 9.50...9.70 travel mm

rpm : 1000 2nd speed

: 7.80...8.00 travel mm

rpm : 800 3rd speed

: 6.40...6.80 travel mm

rpm : 450 4th speed

travel mm : 3.50...3.70 : 350

5th speed rpm : 2.00...2.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed Aneroid pressure h: 900

: 163.5...165.5 Del.quantity

1000 : (160.5...168.5)

Spread cm3 : 5.001000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 12.80 rpm : 1210...1220 Speed 2nd rack travel in: 4.00 rom : 1335...1365 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed nom : 275 Minimum rack trave: 7.20 Speed Rack travel in mm: 5.40...5.60 CONSTANT REGULATION Speed rpm : 390...460 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 13.80...13.90 rpm : 750 2nd speed Rack travel in m: 12.30...12.50 3rd speed rpm : 550 Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 1150 Speed rpm hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement 1/min: 1150 Speed 1st pressure hPa : -Rack travel in m: 8.30...8.70 2nd pressure hPa : 300 Rack travel in m: 9.90...10.00 3rd pressure hPa : 525 Rack travel in m: 12.50...12.90 START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 Speed rpm : 750 Del.quantity cm3/ : 166.0...172.0 1000 s: (163.0...175.0)

cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 108.5...112.5 1000 s: (106.5...114.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...190.0 1000 s: (148.0...192.0) Rack travel in mm: 11.50...12.30

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 26.5...32.5
1000 s: (24.5...34.5)

cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : FOR 6,6 n : 24.10.90 : 3.7.90 Edition Replaces Test oil : ISO-4113

: 9 400 087 421 Combination no.

Injection pump

Pump designation : PES6P100A720RS3235

EP type number : 9 400 087 067

Governor

: RQV350...1300PA923-4 Governor design.

: 9 420 080 276 Governer no.

Customer-spec. information : FORD (FNH) Customer

Engine : 6.6 Ltr

1st version kW : 125.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Lenath mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 14.90...15.00

Del.guantity cm3/: 14.4...14.6

100 s: (14.1...14.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2) Spread cm3: 0.5

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

: 9.20...9.40 travel mm

2nd speed rpm : 600

: 4.80...5.10 travel mm

: 450 3rd speed rom

3.60...3.90 travel mm

4th speed riom

: 350 : 2.00...2.20 travel mm

: 275 5th speed man

: 0.70...1.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1200

Del.quantity : 144.0...149.0)

cm3 : 5.00Spread

1000 : (9.00)

### RATED SPEED

1st version Control lever

position degrees: 119...127

Testing:

1st rack travel in: 14.00

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

rpm : 1500...1530 Speed

4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 63...71

Testina:

: 275 Speed rpm Minimum rack trave: 8.50 : 350 Speed rom

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 14.95...15.00

rpm : 850 2nd speed

Rack travel in m: 12.80...13.00

3rd speed rpm : 550

Rack travel in m: 11.50...11.90

Aneroid/Altitude Compensator Test

1st version

Setting

: 1300 Speed rpm hPa : 1200 Pressure

: 14.90...15.00 Rack travel mm

Measurement

1/min: 1300 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.70

2nd pressure hPa : 375

Rack travel in m: 10.90...11.00

3rd pressure hPa : 715

Rack travel in m: 13.50...13.90

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 850 Speed rpm

Del.quantity cm3/: 132.0...138.0 1000 s: (129.0...141.0)

cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: -

Speed rpm

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

**BREAKAWAY** 

Spread

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0)

Rack travel in mm : 13.10...13.90

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 14.0...20.0 1000 s: (12.0...22.0)

cm3 : 5.00 1000 s: (8.00) Spread

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : FOR 6,6 n 1 Edition : 24.10.90

Replaces

: ISO-4113 Test oil

: 9 400 087 422 Combination no.

Injection pump

Pump designation : PES6P100A720RS3235

: 9 400 087 067 EP type number

Governor

: RQV350...1200PA923-5 Governor design.

: 9 420 080 277 Governer no.

Customer-spec. information

: FORD (FNH) Customer

Engine : 6.6 Ltr

: 138.0 1st version kW

: 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 12001st speed

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2)

cm3 : 0.5 100 s: (0.8) Spread

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 8.90...9.10 travel mm

rpm : 600 2nd speed

: 5.40...5.60 travel mm

rpm : 450 3rd speed

travel mm : 3.80...4.00

rpm : 350 4th speed

travel mm 2.00...2.20

5th speed : 275 rpm

: 0.70...1.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1200

Del.quantity : 152.0...154.0

1000 : (149.0...157.0)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 14.10 Speed rpm : 1260...1270 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 63...71 Testing: Speed : 275 rom Minimum rack trave: 8.50 rpm : 350 Rack travel in mm : 6.50...6.70

CONSTANT REGULATION rpm : 390...460 Speed

Dimension a mm Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 15.10...15.20

rpm : 750 2nd speed Rack travel in m: 13.30...13.50

rpm : 550 3rd speed

Rack travel in m: 12.30...12.70

Aneroid/Altitude Compensator Test

TORQUE CONTROL

1st version Setting Speed

: 1200 rpm hPa : 1200 Pressure

: 15.10...15.20 Rack travel mm

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 280

Rack travel in m: 10.70...10.80

3rd pressure hPa : 665

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 750 Speed rpm

Del.quantity cm3/: 151.0...157.0 1000 s: (148.0...160.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 78.0...82.0 1000 s: (76.0...84.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 14.10

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0)

Rack travel in mm : 13.10...13.90

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0 1000 s: (12.0...22.0)

Spread

cm3 : 5.00 1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 11,1 i : 24.10.90 : 24.11.89 Test sheet Edition

Combination no. : 9 400 087 424

Injection pump

Pump designation : PE6P120A720RS7020 EP type number : 0 412 626 828

Governor

Replaces

Test oil

Governor design. : RQV200...1000PA539-8

: ISO-4113

Governer no. : 0 421 813 635

Customer-spec. information Customer : SAAB-SCANIA

: DS 11 34 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.8...2.2

100 s: (-)

cm3 : 0.3 Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 : 1.20...1.60 1st speed

travel mm 2nd speed

rpm : 350 : 2.40...3.00 travel mm

3rd speed rpm : 650 : 4.50...5.10

travel mm rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1150 5th speed

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 208.0...210.0 1000 : (205.0...213.0)

cm3 : 6.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 11.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00 Speed rpm : 1135...1165

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 61...69

Testing:

Speed : 100 rpm Minimum rack trave: 6.20 Speed rom : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 Speed rpm : 340...400

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90
2nd pressure hPa : 520
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 198.0...206.0

1000 s: (196.0...208.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 225 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery—valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO diaphragm.

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

CD4

Prestroke mm : 4.25...4.35 : (4.20...4.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : FOR 7,8 e 3 Test sheet Edition : 26.03.90 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 087 427 Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3151 : 9 400 087 047 BASIC SETTING EP type number Governor Governor design. : RQV350...1200PA863-9 rpm: 1200 1st speed : 9 420 080 281 Governer no. Rack travel in mm : 13.30...13.40 Customer-spec. information Del.quantity cm3/: 13.2...13.4 : FORD (FNH) Customer : 7.8 L TC 100 s: (13.0...13.6) Engine cm3 : 0.51st version kW : 156.0 Spread Rated speed : 2400 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm: 8.0...8.2 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 2.6...3.0 100 s: (2.3...3.2) Overflow valve Spread cm3 : 0.3: 9 401 087 403 100 s: (0.5) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 1360 Opening . travel mm : 8.40...8.50 rpm : 1000 : 207...210 2nd speed pressure, bar travel mm : 5.50...5.90 rpm : 800 3rd speed Orifice plate : 4.40...4.80 diameter mm : 0,6 travel mm rpm : 500 4th speed : 2.60...3.00 travel mm rpm : 300 : 1 680 750 015 Test lines 5th speed : 0.90...1.30 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X600 Control-lever position x Length mm Degree: -1 rpm : 1440 Speed (A) Injection pump setting values Rack travel in mm : 6.70...9.30 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Aneroid pressure h: 600

Speed

rpm : 1200

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 132.0...134.0 1000 : (130.0...136.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 43...51 Testina: 1st rack travel in: 12.30 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 4th rack travel in: 1520 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 13...21 Testing: Speed : 100 rpm Minimum rack trave: 12.00 rpm : 350 Speed Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 13.30...13.40 rpm : 850 2nd speed Rack travel in m: 13.70...13.80 3rd speed rpm: 950 Rack travel in m: 13.60...13.80 4th speed rpm : 1120 Rack travel in m: 13.30...13.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 600 Pressure Rack travel mm : 13.70...13.80 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.80...12.00 2nd pressure hPa : 400 Rack travel in m: 12.30...12.40

3rd pressure hPa : 475 Rack travel in m: 13.10...13.30 START CUT-OUT Speed 1/min : 290 (310) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 rpm : 850 Speed Del.quantity cm3/: 119.0...123.0 1000 s: (117.0...125.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 70.0...72.0 1000 s: (68.0...74.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.30 rpm : 1260...1270 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 8.00...8.20 Del.quantity cm3/: 26.0...30.0 1000 s: (23.5...32.5) : 3.50 Spread cm3 1000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before

shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 11,1 i3 Edition : 24.10.90 : 26.3.90 Replaces : ISO-4113 Test oil : 9 400 087 428 Combination no. Injection pump Pump designation : PE6P120A720RS7020 : 0 412 626 828 EP type number Governor Governor design. : RQV200...1000PA539-: 0 421 813 813 Governer no. Customer-spec. information Customer : SAAB-SCANIA Engine : DS 11 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate : 0,8 diameter mm Test Lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 20.8...21.0 100 s: (20.5...21.3) cm3 : 0.6Spread 100 s: (0.9) rpm : 225.0 2nd speed Rack travel in mm : 4.6...5.0 Del.quantity cm3/ : 1.8...2.2 100 s: (1.5...2.5) cm3 : 0.3Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 225 1st speed travel mm : 1.20...1.60 2nd speed : 350 rpm : 2.40...3.00 travel mm 3rd speed : 650 rom : 4.50...5.10 travel mm : 1045 4th speed rpm : 8.40...8.60 travel mm rpm : 1150 5th speed : 9.80...10.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 900 : 208.0...210.0 Del.quantity 1000 : (205.0...213.0)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 5.00...5.10

: (4.95...5.15)

cm3 : 6.00Spread

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 11.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 61...69

Testing:

Speed : 100 rpm Minimum rack trave: 6.20

Speed rpm : 225

Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00 Speed rpm : 340...400

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 520

Rack travel in m: 12.30...12.40

3rd pressure hPa : 320

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1000 Speed rpm -

Del.quantity cm3/: 198.0...206.0 1000 s: (196.0...208.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 151.0...155.0

1000 s: (149.0...157.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 275.0...325.0 1000 s: (271.0...329.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO

diaphragm.

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Note remarks

: MB 6,0 i 2 Test sheet : 24.10.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 431

Injection pump

Pump designation : PES6P120A720RS3256

: 9 400 087 071 EP type number

Governor

Governor design. : RQV300...1300PA963-2

: 9 420 080 285 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M 366 LA Engine

: 140.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm

(4.25...4.45) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 13.6...13.8

100 s: (13.3...14.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 8.2...8.6

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 3001st speed

: 1.10...1.70 travel mm

2nd speed

rpm : 650 : 3.70...4.30 travel mm

rpm : 1060 3rd speed

: 5.60...6.10 travel mm

rpm : 1460 4th speed

travel mm : 9.70...10.20

: 1360 5th speed rpm

: 8.20...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1 rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 1000 Del.quantity : 150.0...141.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 110...118 Testina: 1st rack travel in: 10.20 rom : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 70...78 Testina: : 200 Speed rpm Minimum rack trave: 9.60 : 300 rpm Rack travel in mm : 8.20...8.60 CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed MCN hPa : -Pressure : 10.40...10.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 350

Rack travel in m: 10.60...10.80 2nd pressure hPa : 450 Rack travel in m: 11.20...11.40 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 : 800 Speed rpm Del.quantity cm3/: 117.0...121.0 1000 s: (114.0...124.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 63.0...65.0
1000 s: (60.0...68.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version

1mm rack travel less than full load rack tr: 10.20 rpm : 1340...1350 Speed

Speed rpm : 100 Del.quantity cm3/: 70.0...90.0 1000 s: (66.0...94.0)

Remarks:

STARTING FUEL DELIVERY

Note remarks

: MB 12,0 e 1 Test sheet : 24.10.90 Edition

Replaces

Test oil : ISO-4113

: 9 400 087 433 Combination no.

Injection pump

Pump designation : PES6P120A720LS7176

: 0 412 726 821 EP type number

Governor

Governor design. : RQ300/1050PA897 : 0 421 801 452 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM447 A Engine

: 209.8 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.guantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.6

Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 650 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.50 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed : 1160...1190 LDW 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.2 Testing: Speed rom Minimum rack trave: 7.70 npm : 300 Speed Rack travel in mm : 6.00...6.40 Rack travel in mm: 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.50...13.70 2nd speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 680 : 14.10...14.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 \* 4th pressure hPa : Rack travel in m: 11.30...11.60 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200 : 1050 Speed rpm Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...290.0 1000 s: (176.0...204.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm: 9.00...12.00

Firing order: 1-5-3-6-2-4 Note remarks Test sheet : VOL 12,2 h1 Edition : 24.10.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 9 400 087 434 Tolerance + - ° : 0.50 (0.75) Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3178 EP type number : 0 411 826 752 BASIC SETTING Governor Governor design. : RQV250...1025PA921-2 1st speed rpm: 700 Governer no. : D 421 813 785 Rack travel in mm : 14.00...14.10 Customer-spec. information Del.quantity cm3/: 25.2...25.4 Customer : VOLVO : TD 122 FS 100 s: (24.9...25.7) Engine : 287.0 cm3 : 0.5Spread 1st version kW : 2050 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.1 Test oil Del.quantity cm3/: 1.8...2.3 inlet temp. °C : 38...42 100 s: (1.5...2.5) Overflow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.10...1.30 travel mm **Opening** : 207...210 rpm : 500 2nd speed pressure, bar : 4.10...4.90 travel mm rpm : 700 3rd speed Orifice plate : 6.30...6.70 rpm : 900 diameter mm : 0,8 travel mm 4th speed : 6.30...6.70 travel mm Test lines : 1 680 750 067 rpm : 1025 5th speed : 7.30...7.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-Lever position x Lenath mm Degree: -1 rpm : 1090 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY st version rpm : 700 Test pressure, bar: 25...27 Speed

Aneroid pressure h: 1200

: 252.0...254.0 Del. quantity 1000 : (249.0...257.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 61...69 Testina: 1st rack travel in: i3.00 rpm : 1055...1065 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 6...14 Testing: Speed rpm : 100 Minimum rack trave: 6.40 Speed rom Rack travel in mm : 4.80...5.10 CONSTANT REGULATION rpm : 250...400 Speed Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1200 Pressure Rack travel mm : 14.00...14.10 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.20 2nd pressure hPa : 120 Rack travel in m: 0.20...0.30 3rd pressure hPa : 810 Rack travel in m: 3.30...3.70 FUEL DELIVERY CHARACTERISTICS

**BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1055...1065 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 4.80...5.10 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5) cm3 : 5.00 Spread 1000 s: (7,00) Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

Speed

1st version

Aneroid pressure h: -

rpm : 700

Del.quantity cm3/: 163.0...165.0 1000 s: (160.0...168.0)

Prestroke mm : 2.60...2.70 : (2.55...2.75)
Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks ": 1-5- 3- 6- 2- 4 Firing order : VOL 10,0 z1 Test sheet : 24.10.90 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Combination no. : 9 400 087 435 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 Injection pump Pump designation : PE6P12DA32ORS3186 : 0 411 826 756 BASIC SETTING EP type number Governor Governor design. : RQV250...1025PA921-4 rpm: 700 1st speed : 0 421 813 787 Governer no. Rack travel in mm : 11.40...11.50 Customer-spec. information : VOLVO Del.quantity cm3/: 19.7...19.9 Customer 100 s: (19.4...20.2) : TD 102 F Engine 1st version kW : 220.0 Spread cm3 : 0.5: 2050 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Test oil Rack travel in mm: 4.2...4.4 : 38...42 Del.quantity cm3/: 1.7...2.2 inlet temp. °C 100 s: (1.4...2.4) cm3 : 0.5Overflow valve Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 250 1st speed Opening travel mm rpm : 500 : 207...210 2nd speed pressure, bar travel mm rpm : 700 Orifice plate 3rd speed travel mm diameter mm : 0,8 rpm : 900 4th speed travel mm Test Lines : 1 680 750 067 : 1025 5th speed rpm travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X1000 Control-lever position x Length mm Degree: -1 (A) Injection pump setting values

: 1.10...1.30 : 4.10...4.90 : 6.30...6.70 : 6.30...6.70 : 7.30...7.80 rpm : 1080 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 197.0...199.0 Del.quantity 1000 : (194.0...202.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 10.40 Speed rpm: 1055...1065 2nd rack travel in: 4.00 rpm : 1110...1140

Speed 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testina:

Speed rpm Minimum rack trave: 5.70 : 250 rpm Speed

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1000 Pressure

Rack travel mm : 11.40...11.50

Measurement

1/min: 500 Speed

1st pressure hPa : -2nd pressure hPa : 80

Rack travel in m: 0.20...0.30

3rd pressure hPa : 400

Rack travel in m: 2.10...2.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1055...1065 Speed

LOW IDLE

Speed rpm: 250 Rack travel in mm: 4.20...4.40 Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery—valve spring pre—tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: VOL 10,0q14 Test sheet Edition : 24.10.90

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 436

Injection pump

: >E6P110A320RS3108V Pump designation

: 0 411 816 737 EP type number

Governor

Governor design. : RQV250...1100PA589-3

: 9 420 080 288 Governer no.

Customer-spec. information Customer : VOLVO

Engine : THD 101 FD

: 210.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.0...18.2

100 s: (17.7...18.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 3.0...3.4 100 s: (2.7...3.6)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.10...1.30 travel mm

rpm : 500 2nd speed

: 4.10...4.90 travel mm rpm : 700 3rd speed

: 6.30...6.70 travel mm

950 4th speed rpm : : 6.30...6.70 : 1100 travel mm

5th speed rpm

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 18U.U...102.U 1000 : (177.0...185.0)

Spread

: 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.70

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed : 100 rpm

Minimum rack trave: 6.80

rpm : 250

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00

: 345...405 Speed rpm

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.90

2nd pressure hPa : 300

Rack travel in m: 10.00...10.10

3rd pressure hPa : 870

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

: 700 Speed rpm

Del.quantity cm3/: 106.0...108.0 1000 s: (103.0...111.0)

**BREAKAWAY** 

**C18** 

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

**Omnibus** 

Note remarks

: IHC 9,0 f 2 : 29.11.90 : 3.3.87 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 015

Injection pump

Pump designation : PES8A75D32ORS2463

Governor

: RQV300...1500AB1058b Governor design.

Customer-spec. information Customer : IHC

Engine : DV 550 C

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

Inlet press., bar: 2.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 9 681 230 702

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

: 1.95...2.05 \* Prestroke mm  $(1.9\dot{0}...2.10)$ 

Rack travel in mm: 10.70

: 3.95...4.05 Prestroke mm

(3.90...4.10)\*\*

Rack travel in mm: 10.70

: 1-8-7-3-6-5-4-2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 9.65...9.75

Del.quantity cm3/: 5.9...6.0

100 s: (-)

Spread cm3 : 0.2

100 s: (-)

2nd speed rpm : 300

Rack travel in mm: 5.20

Del.quantity cm3/: 1.5...2.0 \*\*

100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1600

Rack travel in mm : 15.00...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1500 Speed

: 58.8...59.8 Del.quantity 1000 : (55.8...61.8)

: 2.0 Spread cm3

1000 : (-)

RATED SPEED

1st version

Control Lever

position degrees: 64...72

Testing:

1st rack travel in: 8.70

rpm : 1600...1610 Speed

2nd rack travel in: 9...14 : 1700 Speed rpm

3rd rack travel in: 3.00...9.50

: 1800 Speed ndu 4th rack travel in: 2000

Speed : 0.00...1.00 rpm

LOW IDLE 1

Control lever

position degrees: 6...14

Testing: : 200 rpm Speed Minimum rack trave: 8.20 : 300 Speed rpm Rack travel in mm : 5.40...7.30 Rack travel in mm: 3.05 : 450 Speed rpm Speed rom Maximum rack trave: 0.10 Speed rom Rack travel in mm: 1.95 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 9.70 : 1000 2nd speed rom Rack travel in m: 10.00...10.10 rd speed rpm : 700 3rd speed Rack travel in m: 10.00...10.10 START CUT-OUT Speed 1/min: 150...230 FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed rpm Del.quantity cm3/: 50.5...52.5 1000 s: (47.5...54.5) : 300 Speed mqn Del.quantit/ cm3/: 1.0...15.0 \* 1000 s: (-) : 300 Speed rpm Del.quantity cm3/: 37.0...46.0 \*\* 1000 s: (-) STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 110.0...132.0 1000 s: (-) LOW IDLE : 300 Speed rom Del.quantity cm3/: 15.4...19.4 \*\* 1000 s: (-) Remarks:  $\star$  = Cylinders 1,7,6 and 4 \*\* = Cylinders 2,8,3 and 5

Port opening at 3.95...4.00 mm plunger lift

Note remarks

Test sheet : MB 5,7 n 20 : 24.10.90 Edition : 26.3.90 Replaces Test oil : ISO-4113

Combination no. : 9 407 083 211

Injection pump

Pump designation : PES6A90D410RS2293 : 0 410 896 031 EP type number

Governor

Governor design. : RSV350...1050A1B1086

: 9 420 083 138 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M352A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 003

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 : (2.10...2.30) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 8.40...8.50

Del.quantity cm3/: 4.4...4.5

100 s: (4.2...4.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 7.4...7.6

Del.quantity cm3/: 1.1...1.7

100 s: (0.9...1.9)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 44.0...45.0 Del.quantity

1000 : (42.0...47.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 7.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1120...1150 4th rack travel in: 1400

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever position degrees: 31...39 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0 : 350 Speed rpm Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 Speed rpm : 550...610 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 8.40...8.50 2nd speed rpm : 500 Rack travel in m: 10.90...11.00 4th speed rpm : 800 Rack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 57.0...59.0 1000 s: (54.5...61.5) nom : 800 Speed Del.quantity cm3/: 49.5...51.5 1000 s: (47.0...54.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 7.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 13.70...14.30 LOW IDLE Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 11.0...17.0 1000 s: (9.0...19.0) cm3 : 2.50 Spread 1000 s: (4.50) Remarks: **APPLICATION** Wheel loader

**C22** 

Note remarks

Test sheet : KHD 19,0 n2 : 14.12.90 Edition : 18.12.87 Replaces : ISO-4113 Test oil

: 0 400 640 107 Combination no.

Injection pump

Pump designation : PE12A95D610LS2590 : 0 410 690 995 EP type number

Governor

: RQV300...1150AB1047D Governor design.

: 0 420 214 242 Governer no.

Customer-spec. information Customer

: F12L413FW Engine

: 204.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 1.50...1.60 : (1.45...1.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1- 4- 9- 8- 5- 2-Firing order

11- 10- 3- 6- 7- 12

: 0-15-60-75-120-135-Phasing

180-195-240-255-300-

315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 9.60...9.70

Del.guantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7) cm3 : 0.7

Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.60 travel mm 2nd speed 390

rpm : travel mm

: 2.20...2.60 rpm : 1195 3rd speed

travel mm

: 8.70...9.10

: 1245 4th speed rpm

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Del.quantity : (3.0...79.0)

cm3 : 3.50Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 8.60

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 67...75

Testing:

Speed rpm : 200 Minimum rack trave: 8.40

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...420

TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

: 1150 1st speed rpm

Rack travel in m: 9.60...9.70

rpm : 500 2nd speed

Rack travel in m: 10.60...10.70

3rd speed rpm : 880

Rack travel in m: 10.30...10.50 th speed rpm : 990

4th speed rpm

Rack travel in m: 9.90...10.10

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 80.5...83.5 1000 s: (78.0...86.0)

: 100 Speed Com

Del.quantity cm3/: 65.0...70.0 1000 s: (62.5...72.5)

RACK STOP ADJUSTMENT

: 500 Speed rom

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.60

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 15.40...15.80

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

**APPLICATION** 

Below-ground operation

Note remarks

Test sheet : KHD19,0 n 4
Edition : 14.12.90
Replaces : 6.7.90
Test oil : ISO-4113

Combination no. : 0 400 640 115

Injection pump

Pump designation : PE12A95D61DLS2590 EP type number : 0 410 690 995

Governor

Governor design. : RQV300...1000AB1047-

1L

Governer no. : 0 420 212 223

Customer-spec. information Customer : KHD

Engine : F12L413FW

1st version kW : 182.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60

: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 9-8-5-2-

11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-

180-195-240-255-300-

315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3 100 s: (0.5)

100 31 (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.30

2nd speed rpm : 340 travel mm : 1.80

travel mm : 1.80...1.90 3rd speed rpm : 390

travel mm : 2.40...2.50

4th speed rpm : 1050

travel mm : 8.70...8.90

5th speed rpm : 1110

travel mm : 9.50...9.70

GUIDE SLEEVE POSITION Control-lever position

Lever position
Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1000

: 79.0...81.0 Del.quantity

1000 : (77.0...83.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 9.00

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1085...1115

LOW IDLE 1

Control Lever

position degrees: 83...91

Testing:

Speed : 200 rom Minimum rack trave: 9.00 rpm : 300 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 300...450 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 10.00...10.10

: 800 2nd speed rpm

Rack travel in m: 10.40...10.50

3rd speed rpm : 900

Rack travel in m: 10.20...10.40

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 100 Speed rpm

Del.quantity cm3/: 65.0...70.0 1000 s: (62.5...72.5)

: 800 Speed rom

Del.quantity cm3/: 82.5...85.5 1000 s: (80.0...88.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 15.40...15.80

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

**APPLICATION** 

Below-ground operation

Note remarks

: STE 6,0 i Test sheet : 16.11.90 Edition : 12.76 Replaces

: ISO-4113 Test oil

: 0 400 656 152 Combination no.

Injection pump

Pump designation : PE6A90D412RS2507 : 0 410 696 178 EP type number

Governor

Governor design. : RQV300...1400AB970DL

: 0 420 214 222 Governer no.

Customer—spec. information : SNF Customer

Engine : WD61039

1st version kW : 97.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 5.5...5.6

100 s: (5.3...5.8)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 300.0 2nd speed

Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1425 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

: 55.5...56.5 Del.quantity

1000 : (53.5...58.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 7.50 Speed rpm : 1440...1450 2nd rack travel in: 4.00

rpm : 1480...1510 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

**C27** 

LOW IDLE 1 Control lever

position degrees: 62...70

Testing:

rpm : 200 Speed Minimum rack trave: 8.00

Speed rpm : 300 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...450 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed

rt speed rpm : 1400 Rack travel in m: 8.50...8.60

2nd speed rpm : 500

Rack travel in m: 9.70...9.80

rpm : 905 3rd speed

Rack travel in m: 9.30...9.50

4th speed rpm : 1060

Rack travel in m: 8.80...9.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900 Del.quantity cm3/ : 52.5...54.5 1000 s: (50.0...57.0)

rpm : 500 Speed

Del.quantity cm3/: 44.5...46.5 1000 s: (42.0...49.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 7.50

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...120.0

1000 s: (107.0...123.0)

Rack travel in mm : 15.00...15.40

Remarks:

APPLICATION

Special-purpose vehicle

**C28** 

Note remarks

: DAF 8,3 k 6 : 20.12.90 Test sheet Edition : 2.2.90 Replaces

: ISO-4113 Test oil

: 0 400 676 184 Combination no.

Injection pump

Pump designation : PE6A95D410RS2525 : 0 410 696 987 EP type number

Governor

: RSV250...1200A5C2199 Governor design.

-1L

: 0 420 232 450 Governer no.

Customer-spec. information Customer : DAF

: DHTD 825 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 10.9...11.0

100 s: (10.7...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

: 109.0...110.0 Del.quantity 1000 : (107.0...112.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 104...112

Testina: 1st rack travel in: 11.60 rpm : 1230...1240 Speed 2nd rack travel in: 4.00 rpm : 1290...1320 Speed 3rd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1490 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 59...77 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.5 : 250 Speed nom Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 460...520 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.40...13.50 rpm : 400 2nd speed Rack travel in m: 13.60...13.70

3rd speed rpm : 300

Rack travel in m: 13.80...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 1000 Speed rpm Pressure hPa : 700 Rack travel mm : 12.60...12.70 Measurement 1/min: 1000 Speed 1st pressure hPa : -Rack travel in m: 11.60...11.80 2nd pressure hPa : 300 Rack travel in m: 12.30...12.40 3rd pressure hPa : 280 Rack travel in m: 11.90...12.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 85.5...86.5 1000 s: (83.5...88.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1230...1240 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10
Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5)

cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

Note remarks

Test sheet : KHD 6,1 t 1
Edition : 14.12.90
Replaces : 28.11.88
Test oil : ISO-4113

Combination no. : 0 400 836 039

Injection pump

Pump designation: PES6A85D410/3RS2761

EP type number : 0 410 886 895

Governor

Engine

Governor design. : RQ300/1250AB1070-1L

: BF6L913

Governer no. : 0 420 200 111

Customer—spec. information Customer : KHD

1st version kW : 118.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

·

: 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 1000

Rack travel in mm : 17.80...19.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1000 Rack travel in mm : 18.5

Testing: 1st rack travel in: 11.30

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1370...1400

LOW IDLE 1

003

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 6.0

Testina:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00

: 500...540 Speed rom

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 12.20...12.30

3rd speed rpm : 720

Rack travel in m: 12.90...13.10

4th speed rpm : 870

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom.

hPa : Pressure

: 11.40...11.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 11.70...11.90 3rd pressure hPa : 700 Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm

Del.quantity cn3/: 88.5...90.5

1000 s: (86.0...93.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 62.0...64.0 1000 s: (60.0...66.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.30

D<sub>0</sub>4

rpm : 1295...1310 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 17.00...17.40

Remarks:

On activation of the starting solenoid, the start position must be reached.

Note remarks

: MAN 11,1p27 Test sheet : 13.12.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 515

Injection pump

Pump designation : PES6A95D41OLS2542Z

EP type number : 0 410 896 935

Governor

Governor design. : RQ250/1100AB1137-2L

: 0 420 200 084 Governer no.

Customer-spec. information

Customer : MAN

: D2566 MUH Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm

: (1.45...1.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250

Rack travel in mm : 7.00...7.20 Del.quantity cm3/: 0.9...1.5 100 s: (0.65...1.75)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

1000 : (117.5...121.5) Del.quantity

: 3.0 Spread cm3

1000 : (6.0)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 16.0

Testina:

1st rack travel in: 11.70

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1205...1235 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm

Rack travel in mm: 7.10

Testing: rpm : 100 Speed Minimum rack trave: 8.60 Speed rpm : 250 Rack travel in mm : 7.00...7.20 Rack travel in mm : 2.00 Speed rpm : 380...420 rpm : 475 Speed Maximum rack trave: 1.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1100 Del.quantity cm3/ : 128.5...131.5 1000 s: (126.5...133.5) Spread cm3 : 4.01000 s: (7.0) Speed rpm : 500 Del.quantity cm3/ : 117.5...121.5 1000 s: (115.5...123.5) Spread cm3 : -1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1145...1160 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 121.5...131.5 1000 s: (118.5...134.5) Rack travel in mm : 14.60...15.00 Remarks: Set idle stop at 250 min -1 to a control-rod travel of 7.1 mm

: 2.65...2.75 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (2.60...2.80) Rack travel in mm : 10.50 Note remarks : 1-5-3-6-2-4 Firing order : IHC 7,6 y : 15.11.90 Test sheet Edition : 5.10.90 Replaces : ISO-4113 Phasing : 0-60-120-180-240-300 Test oil Combination no. : 0 400 846 579 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A95D32ORS2779 EP type number : 0 410 896 903 BASIC SETTING Governor Governor design. : RQV350...1350AB1248R 1st speed rpm : 1350: 0 420 213 120 Governer no. Rack travel in mm : 12.30...12.40 Customer-spec. information Del.quantity cm3/: 8.4...8.6 Customer : NAVISTAR 100 s: (8.2...8.8) : DT 360 Engine cm3 : 0.31st version kW : 126.0 Spread Rated speed : 2700 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0
Rack travel in mm : 5.9...6.1
Del.quantity cm3/ : 1.7...2.1 Test oil inlet temp. °C : 38...42 100 s: (1.5...2.3) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 2 417 413 038 (B) Setting of injection pump Inlet press., bar: 2.80 with governor Test nozzle holder : 1 688 901 110 GUIDE SLEEVE TRAVEL assembly rpm : 1350 1st speed : 7.30...7.50 travel mm Opening | rpm : 1460 : 250...253 2nd speed pressure, bar : 8.10...8.50 travel mm rpm : 550 3rd speed Orifice plate 3.10...3.70 350 diameter mm : 0,5 travel mm 4th speed rpm : : 1.30...1.70 travel mm Test Lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness rpm : 1350 : 6.00x2.00x600 Speed x Length mm Aneroid pressure h: 900 : 84.0...86.0 (A) Injection pump setting values Del.quantity 1000 : (82.0...88.0) Insp. values in parentheses : 3.50 Set equal delivery quant. Spread cm3 1000 : (6.00) per values BEGINNING OF DELIVERY RATED SPEED

1st version

Test pressure, bar: 27...29

Control lever

position degrees: 44...52

Testina:

1st rack travel in: 11.30

rpm : 1390...1420 Speed

2nd rack travel in: 4.00

Speed rpm : 1525...1535 4th rack travel in: 1625

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 11...19

Testina:

Speed : 100 rpm

Minimum rack trave: 9.00

Speed rpm : 350 Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 185

Rack travel in m: 10.20...10.30

3rd pressure hPa : 350 Rack travel in m: 11.50...11.90

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm\_ : 500 Speed

Del.quantity cm3/: 61.5...65.5

1000 s: (59.5...67.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.90...6.10
Del.quantity cm3/: 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1816726091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

: DAF 6,2 s Test sheet : 23.11.90 Edition : 14.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 582

Injection pump

Pump designation : PES6A95D32ORS2796 EP type number : 0 410 896 901

Governor

: RQ300/1300AB1253-2R Governor design.

: 0 420 201 653 Governer no.

Customer-spec. information Customer : DAF

: NS 156G Engine

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1 4 1

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 8501st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 800 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 8<u>4.5...</u>85.5 Del.quantity 1000

: (82.5...87.5) : 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 800 Speed rpm Rack travel in mm: 20.0

D09

Testing: 1st rack travel in: 11.60 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 rpm : 1400...1430 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring mqn Rack travel in mm: 5.5 Testing: Speed : 200 rpm Minimum rack trave: 6.40 rpm : 300 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 : 545...585 Speed rom TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 12.40...12.80 : 750 2nd speed rpm Rack travel in m: 14.10...14.70 rpm : 960 3rd speed Rack travel in m: 13.50...14.10 4th speed rpm : 1055 Rack travel in m: 12.60...13.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 12.80...12.90 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 260 Rack travel in m: 12.30...12.40 3rd pressure hPa : 220 Rack travel in m: 11.30...11.50

1st version Aneroid pressure h: 1000 Speed rpm : 1290 Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 44.5...45.5 1000 s: (42.5...47.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.60 Speed rpm : 1320...1330 LOW IDLE Speed : 300 rpm Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

D10

Speed

START CUT-OUT

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PLMP TEST SPECIFICATIONS Note remarks

: DAF 6,2 p 3 : 05.11.90 : 14.9.90 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 400 846 583

Injection pump

Pump designation : PES6A95D32ORS26937

EP type number : 0 410 896 913

Governor

Governor design: : RQ300/1300AB1253R : 0 420 201 649 Governer no.

Customer-spec. information Customer : DAF

Engine : NS 156

: 156.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 1000 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 700

: 87.5...88.5 Del.quantity

1000 : (85.5...90.5)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed : 1000 rpm Rack travel in mm: 20.0

D11

Testing: 1st rack travel in: 11.00 rpm : 1325...1340 Speed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.1 Testina: rpm : 200 Speed Minimum rack trave: 6.80 : 300 Speed rpm Rack travel in mm: 6.00...6.20 Rack travel in mm: 2.00 Speed rpm : 530...570 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1280 Rack travel in m: 12.30...12.40 2nd speed rpm : 1000 Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 12.00...12.10 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 290 Rack travel in m: 11.50...11.60 3rd pressure hPa : 250 Rack travel in m: 10.70...10.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm: 600 Del.quantity cm3/: 53.5...54.5

1000 s: (51.5...56.5)

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1325...1340 Speed LOW IDLE : 300 Speed rpm Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks:

Note remarks

: MB 6.0 j : 23.11.90 : 31.7.90 Test sheet Edition Replaces Test oil : ISO-4113

: 0 400 846 584 Combination no.

Injection pump

Pump designation : PES6A95D410RS2797 EP type number : 0 410 896 900

Governor

: RQV300...1400AB1065-Governor design.

20L

: 0 420 212 225 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 366 Engine

: 97.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 14001st speed

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 6.6...6.8

100 s: (6.4...7.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rpm :

0.80...1.30 travel mm 500

2nd speed rom :

2.30...2.80 travel mm

: 750 3rd speed rpm

: 4.10...4.30 travel mm

rpm : 15004th speed : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

: 66.0...68.0 Del.quantity 1000 : (64.0...70.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 109...117 Testina: 1st rack travel in: 8.30 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 rpm : 1520...1550 Speed 4th rack travel in: 1670 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 70...78 Testing: : 100 Speed COM Minimum rack trave: 9.50 : 300 Speed rpm Rack travel in mm : 8.00...8.20 CONSTANT REGULATION rpm : 450...580 Speed TORQUE CONTROL : 0.90 Dimension a mm Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.30...9.40 2nd speed rpm : 500
Rack travel in m: 10.20...10.40
3rd speed rpm : 900
Rack travel in m: 9.50...9.80 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 53.0...56.0 1000 s: (50.5...58.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.30

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 13.70...14.10

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

D14

Note remarks

Test sheet : RAB 9,7 e : 14.12.90 Edition

Replaces

: ISO-4113 Test oil

: 0 400 846 588 Combination no.

Injection pump

Pump designation : PES6A95D42OLS2804

: 0 410 896 899 EP type number

Governor

Governor design. : RQ200/1050A91246-1R

: 0 420 201 652 Governer no.

Customer-spec. information

Customer : RABA

Engine : D2156 HM6 UT

1st version kW : 162.0 : 2100 Rated speed '

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.80...1.90 Prestroke mm

: (1.75...1.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75)

Time to cyl. no. : 1

Tolerance + - °

BASIC SETTING

rom: 1050 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 11.9...12.1

100 s: (11.7...12.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 200.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2 rpm : 500

Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 700

Del.quantity : 119.0...121.0 1000 : (117.0...123.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.00 Speed rpm : 1095...1110

2nd rack travel in: 4.00

rpm : 1125...1155 Speed

LOW IDLE 1 Setting point w/out bumper spring rpm : 200 Rack travel in mm: 6.5 Testina: rpm : 100 Speed Minimum rack trave: 8.00 rpm : 200 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 : 300...340 Speed rom TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.00...12.10 rpm : 415 2nd speed Rack travel in m: 13.20...13.30 3rd speed rpm : 680 Rack travel in m: 12.80...13.00 4th speed rpm : 835 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Settina rpm : 500 hPa : 700 Speed rom Pressure : 12.70...12.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 230 Rack travel in m: 12.00...12.10
3rd pressure hPa : 160
Rack travel in m: 10.70...10.90 START CUT-OUT 1/min: 140 (160) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 600 Speed Del.quantity cm3/: 113.0...116.0

1000 s: (110.5...118.5)

Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) RACK STOP ADJUSTMENT : 500 Speed rpm **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 Speed rpm : 1095...1110 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 150.0...160.0 1000 s: (147.0...163.0) Rack travel in mm : 17.50...17.70 Remarks: Set idle stop at 250 min -1 to a control-rod travel of 6.5 mm **APPLICATION** 

0mnibus

D16

Speed

Aneroid pressure h: -

rpm : 500

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,7 b : 07.01.91 Edition Replaces : ISO-4113 Test oil : 0 400 846 589 Combination no. Injection pump : PES6A95D32ORS2779 Pump designation : 0 410 896 903 EP type number Governor Governor design. : RQV350...1200AB1252-: 0 420 213 123 Governer no. Customer-spec. information Customer : NAVISTAR : DT 466 Engine : 138.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder assembly : 1 688 901 110 Opening pressure, bar : 250...253 Orifice plate diameter mm : 0,5 Test Lines : 1 680 750 008

: 2.65...2.75 : (2.60...2.80) Prestroke mm Rack travel in mm : 10.50 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasina Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 13.00...13.10 Del.quantity cm3/: 9.4...9.6 100 s: (9.2...9.8) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.7...2.1 100 s: (1.5...2.3) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1400 1st speed : 9.30...9.70 rpm : 1250 travel mm 2nd speed travel mm : 7.90...8.10 rpm : 550 3rd speed : 3.10...3.70 travel mm : 350 4th speed rpm travel mm : 1.30...1.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed Aneroid pressure h: 900 : 94.5...96.5 Del.quantity 1000 : (92.5...98.5) : 3.50 Spread cm3 : (6.00) 1000 RATED SPEED

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

: 6.00X2.00X600

per values \_\_\_\_

Outside diameter

x Wall thickness

x Length mm

BEGINNING OF DELIVERY Test pressure, bar: 27...29

1st version Control Lever

position degrees: 48...56

Testing:

1st rack travel in: 12.00

rpm : 1285...1315 Speed

2nd rack travel in: 4.00

Speed rpm: 1425...1435 4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 11...19

Testing:

Speed : 100 rpm

Minimum rack trave: 9.00 rpm : 350 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting Speed

: 500 man

hPa : 900 Pressure

: 13.00...13.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 245 Rack travel in m: 11.00...11.10

3rd pressure hPa : 435

Rack travel in m: 12.40...12.80

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 74.0...78.0 1000 s: (72.0...80.0)

BREAKAWAY

D18

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 1285...1315 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: NAVISTAR #1817003c91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet **Fdition** 

: IHC 7,7 b 1 : 07.01.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 846 590

Injection pump

Pump designation

: PES6A95D32ORS2779

EP type number

: 0 410 896 903

Governor

Governor design.

: RQV350...1200AB1252-

Governer no.

: 0 420 213 124

Customer

Customer-spec. information : NAVISTAR

Engine

: DT 466

1st version kW

: 138.0

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 110

Opening

pressure, bar

: 250...253

Orifice plate

diameter mm

: 0,5

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.65...2.75

: (2.60...2.80)

Rack travel in mm : 10.50

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 9.4...9.6

100 s: (9.2...9.8)

Spread

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.3)

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

travel mm

9.30...9.70

2nd speed rpm

: 1250

travel mm

: 7.90...8.10

3rd speed rpm : 550

: 3.10...3.70 travel mm

: 350 4th speed rpm

travel mm

: 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200

Aneroid pressure h: 900

: 94.5...96.5

: (92.5...98.5)

Aneroid F. Del.quantity 1000

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version Control Lever

position degrees: 49...57

Testing:

1st rack travel in: 12.00

rom : 1285...1315 Speed

2nd rack travel in: 4.00

rpm : 1425...1435 Speed

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 13...21

Testing:

Speed : 100 rpm

Minimum rack trave: 9.00

: 350 Speed man

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

rpm : 500 Speed

hPa : 900 Pressure

: 13.00...13.10 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 175

Rack travel in m: 9.60...9.70

3rd pressure hPa : 430

Rack travel in m: 11.70...12.10

START CUT-OUT

1/min: 300 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 50.0...54.0 1000 s: (48.0...56.0)

BREAKAWAY

020

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1285...1315

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1817004C91

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

Note remarks

Test sheet : MWM 4,1 b 2 Edition : 20.12.90 : 31.8.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 864 076

Injection pump

Pump designation : PES4A90D320/3RS2659

: 0 410 894 028 EP type number

Governor

: RSV325...1250A0C2182 Governor design.

-7R

: 0 420 233 258 Governer no.

Customer-spec. information Customer : MWM

: TD224/04 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Openina** 

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10) Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

: 0.50 (0.75) Tolerance + - °

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 9.1...9.2

100 s: (8.9...9.4)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.0...7.2 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

: 91.5...92.5 Del.quantity

1000 : (89.5...94.5) : 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

1st rack travel in: 10.50

rom : 1290...1300 Speed 2nd rack travel in: 4.00 rpm : 1325...1355 Speed 3rd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1505 rpm : 0.30...1.40Speed LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 11.50...11.60 2nd speed rpm : 500 Rack travel in m: 12.60...12.70 3rd speed rpm : 890 Rack travel in m: 11.90...12.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure : 12.60...12.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 185 Rack travel in m: 11.60...11.70 3rd pressure hPa : 90 Rack travel in m: 11.00...11.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 700 Speed

Del.quantity cm3/: 98.5...100.5

1000 s: (96.0...103.0)

STARTING FUEL DELIVERY

Remarks: : STILL

Note remarks

Test sheet : MWM 4,1 b 5

Edition : 07.01.91

Replaces Test oil

: ISO-4113

: 0 400 864 084 Combination no.

Injection pump

Pump designation : PES4A90D320/3RS2659

: 0 410 894 028 EP type number

Governor

: RSV325...1250A0c2182 Governor design.

-8R

: 0 420 233 277 Governer no.

Customer-spec. information Customer : MWM

: D226B-4 Engine

: 74.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

d

Phasing : 0-90-180-270

: 0.50 (0.75) Tolerance + - \*

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rom: 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 325.0 2nd speed

Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 0.8...1.2

100 s: (0.6...1.4)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed Aneroid pressure h: 900

: 80.5...82.5 Del.quantity 1000 : (78.5...84.5)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 89...97

1st rack travel in: 9.60 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 3rd rack travel in: 4.00 : 1250...1280 Speed rpm 4th rack travel in: 1415 rom : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 62...70 Setting point w/out bumper spring Speed rpm Rack travel in mm: 5.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 455...515 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 10.70...10.80 2nd speed rpm : 500 Rack travel in m: 11.50...11.60 4th speed rpm : 920 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 900 Pressure : 11.60...11.70 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.50...10.60 2nd pressure hPa : 215 Rack travel in m: 10.80...10.90 3rd pressure hPa : 180 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version

Testina:

: 800 Speed rpm Del.quantity cm3/: 84.5...86.5 1000 s: (82.0...89.0) Aneroid pressure h: 215 : 500 Speed rpm Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 64.0...65.0 1000 s: (62.0...67.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.60 Speed rpm : 1215...1225 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.50...21.00 LOW IDLE : 325 Speed rpm Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 8.0...12.0 1000 st (6.0...14.0) cm3 : 2.50 Spread 1000 s: (4.50) Remarks: : FENDT

APPLICATION

Tractor (tractor engines)

Aneroid pressure h: 900

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks Test sheet : KHD 1 o 7 : 07.01.91 Phasing : 0-90-180-270 Edition Replaces : ISO-4113 Tolerance + - \* : 0.50 (0.75) Test oil Combination no. : 0 400 864 085 BASIC SETTING Injection pump 1st speed rpm: 1150 Pump designation : PES4A85D410/3RS2799 Rack travel in mm : 11.70...11.80 EP type number : 0 410 884 944 Governor Del.quantity cm3/: 8.2...8.3 Governor design. : RSV325...1150A8C2239 -3L Governer no. : 0 420 232 553 100 s: (8.0...8.5) Spread cm3 : 0.3Customer-spec. information Customer 100 s: (0.5) : BF4L913 Engine rpm : 325.0 2nd speed Rack travel in mm: 7.2...7.4 1st version kW : 74.0 Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) : 2300 Rated speed cm3 : 0.2TEST BENCH REQUIREMENTS Spread 100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 000 Speed rpm : 800 Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Click setting x : 4.00Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening. : 172...175 1st version pressure, bar Speed rpm : 1150 Del.quantity : 82.0...83.0 1000 : (80.0...85.0) Test lines : 1 680 750 014 Spread : 3.00 cm3 1000 : (5.00) Outside diameter x Wall thickness RATED SPEED : 6.00x2.00x600 x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Control lever position degrees: 98...106 per values Testing: BEGINNING OF DELIVERY 1st rack travel in: 10.70 rpm : 1190...1200 Test pressure, bar: 25...27 Speed 2nd rack travel in: 4.00

: 1215...1245

Speed

rom

3rd rack travel in: 4.00

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

rpm : 1240...1270 Speed 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 6.5 Testing: Speed : 100 rpm Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.90...7.10 Rack travel in mm: 2.00 rpm : 415...475 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 11.70...11.80 rpm : 500 2nd speed Rack travel in m: 11.90...12.00 4th speed rpm : 830 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 79.5...81.5 1000 s: (77.0...84.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 17.60...18.00 Remarks:

APPLICATION

Excavator

Note remarks

Test sheet : KHD 1 a 47 : 07.01.91 Edition

Replaces

: ISO-4113 Test oil

: 0 400 864 086 Combination no.

Injection pump

Pump designation : PES4A85D410/3RS2799

EP type number : 0 410 884 944

Governor

: RSV325...1250A2C2239 Governor design.

: 0 420 232 554 Governer no.

Customer-spec. information Customer : KHD

: BF4L913 Engine

: 78.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm: 7.2...7.4

Del.quantity cm3/: 0.9...1.5 100 s: (0.7...1.7) Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 84.0...85.0 Del.quantity 1000 : (82.0...87.0)

Spread cm3

: 3.00 1000

RATED SPEED

1st version

Control lever

position degrees: 93...101

Testing:

1st rack travel in: 10.70 Speed rpm : 1295...1305

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00

rpm : 1365...1395 Speed 4th rack travel in: 1500 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 325 Speed Rack travel in mm: 6.5 Testing: Speed : 100 man Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 : 500...560 Speed rpm TORQUE CONTROL Torque control curve – 1st version 1st speed rpm : 1250 Rack travel in m: 11.70...11.80 rpm : 500 2nd speed Rack travel in m: 12.00...12.10 4th speed rpm : 860 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 80.0...82.0 1000 s: (77.5...84.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1295...1305 Speed STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 17.60...18.00 Remarks: **APPLICATION** Tractor (tractor engines)

Note remarks

: FOR 5,9 f 6 Test sheet : 14.12.90 Edition

Replaces

: ISO-4113 Test oil

: 0 400 866 102 Combination no.

Injection pump

Pump designation : PES6A90D210RS2629

: 0 410 896 075 EP type number

Governor

: RSV350...1300A0c2142 Governor design.

: 0 420 232 375 Governer no.

Customer-spec. information : FORD/GB Customer

: DOVER 363 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2Phasing : 0-60-120-180 -240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 5.8...5.9

100 s: (5.6...6.1)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mn: 7.3...7.5

Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.5)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

: 58.5...59.5 Del.quantity 1000 : (56.5...61.5)

: 3.00 cm3Spread

1000 : (4.50)

RATED SPEED

1st version

Control Lever

position degrees: 121...129

Testing:

1st rack travel in: 10.70

rpm : 1370...1380 Speed

2nd rack travel in: 4.00

: 1490...1520 Speed rpm

3rd rack travel in: 4.00

: 1515...1545 Speed rpm

4th rack travel in: 1680

: 0.30...1.70 Speed rpm

LOW IDLE 1 Control lever

position degrees: 84...92 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.0

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 350

Rack travel in mm : 7.40...7.60

Rack travel in mm : 2.00 Speed rpm : 560...610

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 11.70...11.80

2nd speed rpm : 500 3rd speed rpm : 700

Rack travel in m: 11.90...12.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1370...1380 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 76.0...90.0 1000 s: (73.0...93.0)

Rack travel in mm : 19.50...21.00

Remarks:

At start of delivery, locating pin must latch into slit in pointer.

Note remarks

: FOR 5,9 e Test sheet Edition : 6.82

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 105

Injection pump

Pump designation : PES6A90D210RS2628 : 0 410 896 074 EP type number

Governor : RSV325...1200A0B2141

Governor design.

: 0 420 232 261 Governer no.

Customer-spec. information Customer : FORD

: DOVER 363 T/C Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.90 Prestroke mm

: (2.65...2.85)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 : 0.50 (0.75) Phasing

Tolerance + - °

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 8.3...8.4

100 s: (8.1...8.6)

cm3 : 0.3Spread

100 s: (0.45)

2nd speed rpm : 350 Rack travel in mm : 5.10...5.30

Del.quantity cm3/: 0.5...1.1

100 s: (-)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Aneroid pressure h: 700

: 83.5...84.5 Del.quantity 1000 : (81.5...86.5)

: 3.0 Spread cm3

1000 : (4.5)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 10.50

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

3rd rack travel in: 4.00

rpm : 1375...1405 Speed

4th rack travel in: 1540

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 34...42

Setting point w/out bumper spring

Speed rpm: 350 Rack travel in mm: 4.70

Testing:

: 100 Speed rpm Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00

: 490...550 Speed rom

rpm : 625 Speed Maximum rack trave: 1.00

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 1175 Speed Pressure hPa : 700

: 11.50...11.60 Rack travel mm

Measurement

1/min: 1175 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 480

Rack travel in m: 11.10...11.20 3rd pressure hPa : 300 Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 49.0...51.0 1000 s: (47.0...53.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

**E04** 

Del.guantity cm3/ : 76.0...90.0 1000 s: (73.0...93.0)

Rack travel in mm : 10.10...10.20

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

At start of delivery, locating pin must latch into slit in pointer.

Note remarks

Test sheet : FOR 5,9 f5 Edition : 14.12.90

Replaces Test oil : ISO-4113

Combination no. : 0 400 866 109

Injection pump

Pump designation : PES6A90D210RS2629 EP type number : 0 410 896 075

Governor

: RSV350...1300A0c2139 Governor design.

: 0 420 232 374 Governer no.

Customer-spec. information Customer : FORD/GB

: 380 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

**Openina** 

: 172...175 pressure, bar

Test lines · 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 7.2...7.3

100 s: (7.0...7.5)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 350.0Rack travel in mm: 7.0...7.2 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 72.0...73.0 1000 : (70.0...75.0)

cm3 : 3.00 Spread 1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.90 Speed rpm : 1365...1375

2nd rack travel in: 4.00

: 1480...1510 Speed rom

3rd rack travel in: 4.00

: 1500...1530 Speed rpm

4th rack travel in: 1670

: 0.30...1.70 Speed rom

LOW IDLE 1 Control lever position degrees: 28...36

Setting point w/out bumper spring Speed rpm : 350

Rack travel in mm : 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm: 350
Rack travel in mm: 6.40...6.60
Rack travel in mm: 2.00
Speed rpm: 500...560
Speed rpm: 350
Maximum rack trave: 1.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1365...1375 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 76.0...90.0

1000 s: (73.0...93.0)

Rack travel in mm : 19.00...21.00

Remarks:

At start of delivery, locating pin must latch into slit in pointer.

Note remarks

: FOR 5,9 g 1 Test sheet Edition : 14.12.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 110

Injection pump

Pump designation : PES6A90D210RS2629 EP type number : 0 410 896 075

Governor

: RSV350...1300A0c2138 Governor design.

: 0 420 232 373 Governer no.

Customer-spec. information : FORD/GB Customer

: 380 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-

Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 7.2...7.3

100 s: (7.0...7.5)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 350.02nd speed Rack travel in mm: 6.6...6.7

Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Del.quantity : 72.0...73.0

1000 : (70.0...75.0)

: 3.00 : (4.50) Spread cm3

1000

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 11.90

rpm : 1365...1375 Speed

2nd rack travel in: 4.00

rpm : 1480...1510 Speed

3rd rack travel in: 4.00

rpm : 1505...1535 Speed

4th rack travel in: 1670

: 0.30...1.70 Speed rom

LOW IDLE 1

Control Lever

position degrees: 78...86 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed

Rack travel in mm: 3.40...6.60
Rack travel in mm: 2.00
Speed rpm: 515...575
Speed rpm: 650
Maximum rack trave: 1.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1365...1375

# STARTING FUEL DELIVERY

# Remarks:

At start of delivery, locating pin must latch into slit in pointer.

Note remarks

: CUM 8,3 110 Test sheet Edition : 14.12.90 : 9.7.90 Replaces Test oil : ISO-4113

: 0 400 866 148 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2763

EP type number : 0 410 806 006

Governor

Governor design. : RSV415...1175A0c2190

-43R

Governer no. : 0 420 233 249

Customer-spec. information Customer : C.D.C

Engine : 6 CT

1st version kW : 129.0 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1175

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 415.0 2nd speed

Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 1.5...1.9

100 s: (1.3...2.1)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

: 96.0...98.0 Del.quantity

1000 : (94.0...100.0)

: 4.00 Spread cm3 : (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 9.40 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 : 1295...1325 rpm Speed 3rd rack travel in: 4.00

rpm : 1300...1330 Speed 4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 32...40 Setting point w/out bumper spring

rpm : 415 Rack travel in mm: 4.7

Testina:

rpm : 100 Speed Minimum rack trave: 19.00 : 415 rom

Rack travel in mm : 5.10...5.30

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1175 1st speed

Rack travel in m: 10.40...10.50

2nd speed rpm : 800

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 800 Speed

Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.40

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 415 Speed

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 15.0...19.0

1000 s: (13.0...21.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: C.D.C # 3919459

Adjust stop lever to 0.5...1.0 mm before stop.

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

# Note remarks

: MWM 6,2 e 8 Test sheet : 14.12.90 Edition : 31.7.90 Replaces : ISO-4113 Test oil

: 0 400 866 163 Combination no.

Injection pump

Pump designation : PES6A90D320/3RS2660

: 0 410 896 078 EP type number

Governor

: RSV325...1175A0C2247 Governor design.

: 0 420 233 264 Governer no.

Customer-spec. information Customer : MWM

: TD226B-6 Engine

: 107.0 1st version kW : 2350 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed

Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

: 77.0...78.0 Del.quantity 1000 : (75.0...80.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

Control Lever position degrees: 93...101 Testing: 1st rack travel in: 9.30 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 3rd rack travel in: 4.00 Speed rpm : 1265...1295 4th rack travel in: 1430 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring rpm Rack travel in mm: 6.8 Testina: : 100 Speed rpm Minimum rack trave: 19.50 : 325 Speed rpm -Rack travel in mm : 7.20...7.40 Rack travel in mm: 2.00 nom : 500...560 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 11.40...11.50 4th speed rpm : 965 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed man. Pressure : 11.40...11.50 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.40...10.50 2nd pressure hPa : 275 Rack travel in m: 11.00...11.10 3rd pressure hPa : 210 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm: 800
Del.quantity cm3/: 82.5...84.5
1000 s: (80.0...87.0)
Aneroid pressure h: 700
Speed rpm: 500
Del.quantity cm3/: 77.0...79.0
1000 s: (74.5...81.5)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 61.5...62.5
1000 s: (59.5...64.5)

1st version 1mm rack travel less than

full load rack tr: 9.30 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

#### Note remarks

Test sheet : MWM 6,2 e12 Edition : 30.11.90

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 164

Injection pump

Pump designation : PES6A90D320/3RS2660

: 0 410 896 078 EP type number

Governor

Governor design. : RSV325...1175A0C2249

: 0 420 233 265 Governer no.

Customer-spec. information Customer

: TD2268-6 Engine

: 121.0 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 9.3...9.4

100 s: (9.1...9.6)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed

Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2 100 s: (0.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175 Aneroid pressure h: 700

: 93.0...94.0 Del.quantity

1000 : (91.0...96.0) cm3 : 3.00 1000 : (5.00)

Spread

RATED SPEED

Control lever position degrees: 93...101 Testing: 1st rack travel in: 10.70 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 rpm : 1260...1290 Speed 3rd rack travel in: 4.00 rpm : 1280...1310 Speed 4th rack travel in: 1445 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring rpm Rack travel in mm: 5.7 Testing: Speed rom Minimum rack trave: 19.50 : 325 Speed rpm Rack travel in mm : 6.10...6.30 Rack travel in mm: 2.00 Speed rpm : 470...530 TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 11.70...11.80 2nd speed rpm : 500 Rack travel in m: 12.00...12.10 th speed rpm : 715 4th speed Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm Pressure hPa : 700 : 12.00...12.10 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 325 Rack travel in m: 11.60...11.70 3rd pressure hPa : 225 Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 : 600 Speed rpm Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5) Aneroid pressure h: 700 : 1000 Speed rpm Del.quantity cm3/: 90.5...92.5 1000 s: (88.0...95.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 61.5...62.5 1000 s: (59.5...64.5)

## **BREAKAWAY**

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1215...1225
STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks: : RENAULT

# **APPLICATION**

Tractor (tractor engines)

Note remarks

: VAL 2,7 a : 14.12.90 Test sheet Edition : 9.12.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 873 037

Injection pump

Pump designation : PES3A95D32ORS2711 EP type number : 0 410 893 998

Governor

Governor design. : RSV325...1175A0C2178

-3R

: 0 420 233 206 Governer no.

Customer-spec. information Customer : YALMET

: 309 DS4 Engine

1st version kW : 45.0 : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1210

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 325.0 2nd speed Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.7...2.5 100 s: (1.4...2.7) Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 1210 : 75.5...77.5 Del.quantity 1000 : (73.5...79.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

Control lever

position degrees: 94...102

Testing:

1st rack travel in: 9.20

rpm : 1250...1260 Speed

2nd rack travel in: 4.00

rpm : 1325...1355 Speed

3rd rack travel in: 4.00

Speed rpm: 1330...1360 4th rack travel in: 1500

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 71...79

Setting point w/out bumper spring

Speed rpm Rack travel in mm : 5.7

Testing:

Speed rpm

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 6.10...6.30

Rack travel in mm : 2.00

Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1210

Rack travel in m: 10.20...10.30

2nd speed rpm : 500 Rack travel in m: 11.30...11.40 4th speed rpm : 985

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/: 66.5...69.5

1000 s: (64.0...72.0)

Spread cm3 : -

1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

rpm : 1250...1260 Speed

STARTING FUEL DELIVERY

: 100 Speed LDW

E16

Del.quantity cm3/: 155.0...165.0 1000 s: (152.0...168.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 6.10...6.30

Del.quantity cm3/: 17.0...25.0 1000 s: (14.5...27.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet Edition : DAF 6,2 o 4 : 29.05.90 Replaces : 16.5.88 : ISO-4113 Test oil

Combination no. : 0 400 876 341

Injection pump

Pump designation : PES6A95D32ORS2693 : 0 410 896 914 EP type number

Governor

: RSV250...750A7C2206-Governor design.

: 0 420 233 209 Governer no.

Customer-spec. information : DAF Customer

: DNTD620 (1500) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180 -240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 87.5...88.5 Del.quantity 1000 : (85.5...90.5)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 91...99

Testing:

1st rack travel in: 11.70 rpm : 745...750 Speed 2nd rack travel in: 4.00 Speed rpm: 775...790 4th rack travel in: 935 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 69...87 Setting point w/out bumper spring Speed rpm : 300
Rack travel in mm : 5.5
Speed rpm : 300
Rack travel Rack travel in mm : 6.40...6.60 Rack travel in mm: 2.00 rpm : 300...360 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 STARTING FUEL DELIVERY : 100 Speed rpm Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: APPLICATION Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,0 c 10 : 23.11.90 Edition Replaces Test oil : ISO-4113 : 0 400 876 367 Combination no. Injection pump : 2ES6A90D410RS2710-1 Pump designation : 0 410 896 084 EP type number Governor Governor design. : RSV350...750A0c2240-: 0 420 232 558 Governer no. Customer-spec. information : DAIMLER-BENZ Customer : OM 366 Engine : 60.0 1st version kW : 1500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 700 1st speed Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 6.4...6.5 100 s: (6.2...6.7) Spread cm3 : 0.3100 s: (0.5) rpm : 350.02nd speed Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 0.6...1.2 100 s: (0.4...1.4) cm3 : 0.2 Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed : 64.0...65.0 Del.quantity 1000 : (62.0...67.0) : 3.00 Spread cm3 1000 : (5.00) RATED SPEED 1st version Control lever position degrees: 82...90 Testing: 1st rack travel in: 11.20 Speed rpm: 750...755 2nd rack travel in: 4.00 rpm : 780...793 Speed 4th rack travel in: 900

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.25...2.35 : (2.20...2.40)

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 70...78 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 8.2

Testina:

Speed rpm: 100
Minimum rack trave: 19.50
Speed rpm: 350
Rack travel in mm: 8.10...8.30
Rack travel in mm: 2.00
Speed rpm: 380...420

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 16.50...16.90

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : DAF 6,2 q 1 Edition : 20.12.90 Replaces : 5.11.90

Test oil : ISO-4113

Combination no. : 0 400 876 375

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0C2251

R

Governer no. : 0 420 233 272

Customer—spec. information Customer : DAF

Engine : NT 119

1st version kW : 119.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.1...6.2

100 s: (5.9...6.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50 1000 : (6.00)

1000 . (0.

RATED SPEED

Control lever Spread cm3 : 3.50position degrees: 103...111 1000 s: (5.50) Testina: Remarks: 1st rack travel in: 9.30 : rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1385...1415 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1570 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.2 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 rpm : 570...630 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.30...10.40 2nd speed rpm : 500 Rack travel in m: 11.10...11.20 4th speed rpm : 1050 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1290 Speed Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 1340...1350 Speed LOW IDLE rpm : 300 Speed Rack travel in mm : 6.60...6.80 Del.quantity cm3/ : 7.0...11.0

1000 s: (4.5...13.5)

Note remarks

: DAF 6,2 r 1 Test sheet Edition : 20.12.90

Replaces

: ISO-4113 Test oil

: 0 400 876 376 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2796 : 0 410 896 901 EP type number

Governor

: RSV300...1300A0c2248 Governor design.

-2R

: 0 420 233 274 Governer no.

Customer-spec. information Customer : DAF

: NS 156G Engine

: 156.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference \* CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 850 Aneroid pressure h: 1000

: 84.5...85.5 Del.quantity

1000 : (82.5...87.5)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

position degrees: 102...110 Speed Testing: 1st rack travel in: 11.60 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm : 1385...1415 Speed 3rd rack travel in: 4.00 rpm : 1405...1435 Speed 4th rack travel in: 1570 rpm : 0.30...1.40 Speed BREAKAWAY LOW IDLE 1 1st version Control lever position degrees: 69...77 Setting point w/out bumper spring Speed **FIDITI** : 300 Speed Rack travel in mm: 6.2 LOW IDLE Testing: rpm Speed : 100 Speed Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Spread rpm : 550...610 Speed Remarks: TORQUE CONTROL Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 12.60...12.70 2nd speed rpm : 500 Rack travel in m: 13.70...13.80 4th speed rpm : 1085 Rack travel in m: 13.10...13.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 1000 Pressure Rack travel mm : 12.80...12.90 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 260 Rack travel in m: 12.30...12.40 3rd pressure hPa : 210 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 rpm : 1290 Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: rpm : 600 Del.quantity cm3/: 44.5...45.5 1000 s: (42.5...47.5) 1mm rack travel less than full load rack tr: 11.60 rpm : 1320...1330 rpm : 300 Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50 1000 s: (5.50)

9

Control lever

# Note remarks

: DAF 6,2 q 3 : 20.12.90 Test sheet Edition Replaces : 5.11.90 Test oil : ISO-4113

: 0 400 876 378 Combination no.

Injection pump

Pump designation : PES6A95D32DRS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0C2248

-2R

: 0 420 233 274 Governer no.

Customer-spec. information : DAF Customer

Engine : NT 133

: 133.0 1st version kW Rated speed : 2600

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.6...6.8 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 700

: 76.5...77.5 Del.quantity

1000 : (74.5...79.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

rpm : 1290 Speed Control lever Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) position degrees: 104...112 Aneroid pressure h: -Testing: Speed rpm : 600 Del.quantity cm3/: 50.5...51.5 1st rack travel in: 9.50 rpm : 1340...1350 Speed 1000 s: (48.5...53.5) 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 3rd rack travel in: 4.00 Speed rpm: 1410...1440 4th rack travel in: 1570 Speed BREAKAWAY rpm : 0.30...1.40 1st version Speed 1mm rack travel less than LOW IDLE 1 full load rack tr: 9.50 Control lever Speed rpm : 1340...1350 position degrees: 74...82 Setting point w/out bumper spring rpm : 300 LOW IDLE Rack travel in mm: 6.2 Speed : 300 rpm Rack travel in mm : 6.60...6.80 Testing: Del.quantity cm3/ : 7.0...11.0 : 100 Speed rpm 1000 s: (4.5...13.5) Minimum rack trave: 19.50 cm3 : 3.50Speed : 300 Spread rpm 1000 s: (5.50) Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 rpm : 570...630 Remarks: Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 1070 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting rom : 600 hPa : 700 Speed rom Pressure Rack travel mm : 11.50...11.60 Measurement 1/min : 600 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 250 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Note remarks

: DAF 6,2 o 8 Test sheet : 20.12.90 Edition

Replaces

Test oil : ISO-4113

: 0 400 876 379 Combination no.

Injection pump

Pump designation : PES6A95D32DRS2693 : 0 410 896 914 EP type number

Governor

Governor design. : RSV300...1300A0c2248

-3R

: 0 420 233 275 Governer no.

Customer—spec. information Customer

: NT 133 Engine

: 133.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.6...6.8

Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-Lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 700

Del.quantity

: 76.5...77.5 1000 : (74.5...79.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

Control lever position degrees: 106...114 Testina: 1st rack travel in: 9.50 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1390...1420 Speed 3rd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1570 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.2 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.60...6.80 Rack travel in mm: 2.00 rpm : 555...615 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 1070 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure : 11.50...11.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 250 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

rpm : 1290 Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -Speed rpm: 600 Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1340...1350 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Note remarks

: MB 6,0 c 9 : 14.12.90 Test sheet Edition : 16.8.90 Replaces : ISO-4113 Test oil

Combination no. : 0 400 876 380

Injection pump

Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082

Governor

Governor design. : RSV350...1200A1c1163

Governer no. : 0 420 232 546

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 74.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.30...9.40

Del.quantity cm3/: 5.1...5.2

100 s: (4.9...5.4)

Spread cm3 : 0.3

100 s: (0.4)

rpm : 370.0 2nd speed Rack travel in mm: 7.9...8.5 Del.quantity cm3/: 1.0...1.2 100 s: (0.8...1.4)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 51.0...52.0 Del.quantity 1000 : (49.0...54.0)

: 3.00 cm3 Spread

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 109...117

Testina:

1st rack travel in: 8.30

rpm : 1240...1245 Speed

2nd rack travel in: 4.00

rpm : 1267...1280 Speed

3rd rack travel in: 4.00

: 1300...1330 Speed rpm 4th rack travel in: 1400 Speed rpm : 0.30...1.40 5th rack travel in: 1255...1265 rpm : 8.30 Speed LOW IDLE 1 Control lever position degrees: -3 Setting point wout bumper spring Speed rpm : 370 Rack travel in mm : 8.2 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 370 rpm Rack travel in mm : 8.10...8.30 Rack travel in mm : 2.00 rom : 460...520 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.30...9.40 2nd speed rpm : 600 Rack travel in m: 10.00...10.20 3rd speed rpm : 900 Rack travel in m: 9.80...10.10 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 41.0...43.0 1000 s: (38.5...45.5) rpm : 900 Speed Del.quantity cm3/: 46.0...49.0 1000 s: (43.5...51.5) STARTING FUEL DELIVERY rpm : 100 Speed Del\_guantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) Rack travel in mm : 16.80...17.20 LOW IDLE Speed rpm : 370 Rack travel in mm : 7.90...8.50 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) cm3 : 2.50 Spread 1000 s: (4.50) Remarks:

**APPLICATION** 

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F02

Note remarks

Test sheet : DEE 7,7 d 5 : 07.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 382

Injection pump

Pump designation : PES6A100D410RS2762-1

: 0 410 806 008 EP type number

Governor

: RSV400...1100A2C2204 Governor design.

-7L

: 0 420 232 550 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6076ADW03 Engine

: 146.0 1st version kW

Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 190...200

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.95...3.05 : (2.90...3.10)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 2.9...3.3

100 s: (2.7...3.5)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 115.5...117.5 Del.quantity 1000 : (113.5...119.5)

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.80

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1220 Speed

3rd rack travel in: 4.00

Speed rpm: 1210...1240 4th rack travel in: 1300 Speed

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 5.6

Testing:

Speed : 100 rpm

Minimum rack trave: 19.00

rpm : 400 Rack travel in mm : 6.00...6.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.80...11.90

2nd speed rpm : 700

Rack travel in m: 13.50...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

: 400 Speed rom

F04

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 29.5...33.5 1000 s: (27.5...35.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47357

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control

Note remarks

: DEE 7,7 d 6 : 07.01.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 400 876 383 Combination no.

Injection pump

Pump designation : PES6A100D410RS2762-1

: 0 410 806 008 EP type number

Governor

: RSV400...1100A2C2204 Governor design.

-8L

: 0 420 232 551 Governer no.

Customer spec. information

Customer : JOHN DEERE

: 6076TDW02 Engine

1st version kW : 128.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 190...200

Test nozzle holder

: 1 688 901 101 assembly

Opening |

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 : (2.90...3.10) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.2...2.6

100 s: (2.0...2.8)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1100

: 103.5...105.5 Del.quantity

1000 : (101.5...107.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

: 1195...1205 Speed rom

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 400 Speed Rack travel in mm: 5.5

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed : 400 rpm

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.20...11.30

2nd speed rpm : 700

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rom

Del.quantity cm3/: 123.5...127.5 1000 s: (121.5...129.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

: 400 Speed rom

Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 22.0...26.0 1000 s: (20.0...28.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

The stop position of the control rod must be easily reached with the stop lever

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Note remarks

Test sheet : MB 6,0 c 11 : 14.12.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 876 385

Injection pump

Pump designation : PES6A90D410RS2710 : 0 410 896 082 EP type number

Governor

: RSV350...1400A0C1163 Governor design.

-1

: 0 420 232 552 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 96.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.0...6.1

100 s: (5.8...6.3)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm : 8.8...9.4 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.6)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

: 60.5...61.5 Del.quantity 1000 : (58.5...63.5)

: 3.00 Spread 0.5.3

1000 : (5.00)

RATED SPEED

1st version Control Lever

position degrees: 109...117

Testing:

1st rack travel in: 9.80

Speed rpm: 1435...1440 2nd rack travel in: 4.00

rpm : 1475...1488 Speed

3rd rack travel in: 4.00

Speed : 1515...1545 rpm 4th rack travel in: 1575 : 0.30...1.40 Speed rpm 5th rack travel in: 1440...1450 Speed rpm : 9.80 LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring rpm : 350° Rack travel in mm: 9.1 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 9.10...9.30
Rack travel in mm : 2.00 : 470...530 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 10.80...10.90 and speed rpm : 500 Rack travel in m: 12.10...12.20 2nd speed : 750 3rd speed rpm Rack travel in m: 11.80...12.00 rpm : 950 4th speed Rack travel in m: 11.40...11.70 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 52.0...54.0 1000 s: (49.5...56.5) STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 16.90...17.30 LOW IDLE rpm Speed : 350 Rack travel in mm : 8.80...9.40 Del.quantity cm3/: 10.0...14.0 1000 s: (8.0...16.0) Spread cm3 : 2.501000 s: (4.50) Remarks:

**APPLICATION** 

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: 1- 5- 4- 8- 6- 3-7- 2 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks : STE 12.0 h : 30.11.90 Test sheet Edition : 0-45-90-135-180-225-Phasing 270-315 Replaces : 0.50 (0.75) : ISO-4113 Tolerance + - ° Test oil : 0 401 838 709 Combination no. Time to cyl. no. : 1 Injection pump BASIC SETTING Pump designation : PE8P110A120LS3271 : 0 411 818 723 rpm: 1100 EP type number 1st speed Governor Rack travel in mm : 13.40...13.50 Governor design. : RQV250...1100PA951-2 : 0 421 813 908 Governer no. Del.quantity cm3/: 17.4...17.6 Customer-spec. information 100 s: (17.1...17.9) : SNF Customer cm3 : 0.4: WD815.66 Spread Engine 100 s: (0.7) 1st version kW : 270.0 : 2200 Rated speed rpm : 250.02nd speed Rack travel in mm: 4.1...4.3 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.7...2.3 100 s: (1.5...2.5) Test oil inlet temp. °C : 38...42 cm3 : 0.4Spread 100 s: (0.7) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 250 Test nozzle holder 1st speed : 0 681 343 009 : 0.90...1.30 assembly travel mm rpm : 485 2nd speed : 3.20...3.80 Openina travel mm : 172...175 3rd speed rpm : 640 pressure, bar : 4.20...4.80 travel mm rpm : 1145 4th speed : 8.40...8.60 Test lines : 1 680 750 015 travel mm rpm : 1220 5th speed : 9.80...10.20 Outside diameter travel mm x Wall thickness : 6.00x1.50x600 GUIDE SLEEVE POSITION x Length mm Control-lever position Degree: -1 rpm : 1130 (A) Injection pump setting values Insp. values in parentheses Speed Rack travel in mm : 13.20...15.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY Test pressure, bar: 25...27 1st version Speed rpm : 1100 : 2.80...2.90 : (2.75...2.95) Aneroid pressure h: 1200 Prestroke mm

Del.quantity : 174.0...176.0 1000 : (171.0...179.0)

Rack travel in mm : 9.00...12.00

cm3 : 4.00Spread 1000 : (7.50) RATED SPEED

1st version Control lever position degrees: 114...122

Testing:

1st rack travel in: 12.40 Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever position degrees: ?

Testing:

: 100 Speed rom Minimum rack trave: 5.00 rpm : 250

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 250...390 Speed

TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1100

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.40...13.50 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -Rack travel in m: 10.00...10.20 2nd pressure hPa : 600

Rack travel in m: 12.50...12.60

3rd pressure hPa : 380

Rack travel in m: 10.80...11.00

START CUT-OUT

1/min : 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 600 rpm

Del.quantity cm3/: 189.0...193.0 1000 s: (187.0...195.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 117.0...119.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 220.0...260.0
1000 s: (216.0...264.0) Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 7,0 k Test sheet Edition : 8.1.91 Replaces : 3.83 Test oil : ISO-4113 Combination no. : 0 401 846 448 Injection pump : PE6P110A320RS423 Pump designation : 0 411 816 143 EP type number Governor Governor design. : RQV250...1200PA435 : 0 421 813 222 Governer no. Customer-spec. information : VOLVO Customer : TD 70G Engine : 157.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_ BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00 F11

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 10.90...11.00 Del.quantity cm3/: 10.5...10.7 100 s: (10.2...11.0) cm3 : 0.4Spread 100 s: (0.8) rpm : 250 2nd speed Rack travel in mm : 9.60...9.70 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed 200 rom : 1.10...1.40 travel mm rpm : 530 : 3.50...3.70 2nd speed travel mm rpm : 870 3rd speed : 5.20...5.30 travel mm rpm : 1200 4th speed : 7.80...8.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1200 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 700 Del.quantity : 105.0...107.0 1000 : (102.0...110.0)

: 4.0

: (8.0)

cm3 1000

Spread

1st version Control Lever position degrees: 61...69 Testing: 1st rack travel in: 9.90 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm: 1320...1350 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 6...14 Testing: rpm : 100 Speed Minimum rack trave: 6.00 rpm : 250 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 290...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure : 10.90...11.00 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.60...9.70 2nd pressure hPa : 400 Rack travel in m: 10.70...10.80 3rd pressure hPa : 230 Rack travel in m: 9.90...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 81.0...84.0

1000 s: (78.0...87.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...170.0 1000 s: (136.0...174.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) Spread cm3: 3.0

1000 s: (6.0)

Remarks:

Note remarks

: DAF 11.6m13 : 07.01.91 Test sheet Edition Replaces : 12.9.86 : ISO-4113 Test oil

Combination no. : 0 401 846 513

Injection pump

Pump designation : PE6P100A320RS384-1

: 0 411 806 189 EP type number

Governor

Governor design: RQ225/1100PA574-1 Governer no. : 0 421 801 289

Customer—spec. information Customer : DAF

: DK1160V Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 225.0
Rack travel in mm : 7.1...7.3
Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 550
Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

: 108.0...110.0 Del.quantity 1000 : (106.0...112.0)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Setting point:

: 550 Speed rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 9.10

rpm : 1140...1155 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

: 0.00...1.00 Speed rom

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm: 7.2 Testina: rpm : 100 Speed Minimum rack trave: 7.50
Speed rpm : 225
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00 : 325...365 Speed COM TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 600 Rack travel in m: 11.10...11.20 d speed rpm : 1050 Rack travel in m: 10.10...10.30 2nd speed 3rd speed rpm : 820 Rack travel in m: 10.80...11.00 4th speed rpm : 925 Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050 Speed Del.quantity cm3/: 97.0...101.0 1000 s: (94.5...103.5) RACK STOP ADJUSTMENT : 600 Speed rom **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 rpm : 1140...1155 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 195.0...235.0 1000 s: (191.0...239.0) Rack travel in mm: 19.50...21.00 LOW IDLE Speed rpm : 225 Rack travel in mm : 7.10...7.30 Del.quantity\_cm3/ : 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

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Note remarks

Test sheet : DAF 11,6m15 Edition : 15.11.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 567

Injection pump

Pump designation : PE6P100A320RS384-1

EP type number : 0 411 806 189

Governor

Governor design. : RQ225/1100PA974 : 0 421 801 568 Governer no.

Customer-spec. information Customer : DAF

: DKL 1160 Engine

: 151.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 225.0 Rack travel in mm : 7.2...7.4

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

: 110.5...112.5 Del.quantity

: 3.50 Spread cm3

1000 : (6.00)

1000 : (108.5...114.5)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 16.0

Testina:

1st rack travel in: 9.80

rpm : 1140...1155 Speed

2nd rack travel in: 4.00

rpm:: 1170...1200 Speed

4th rack travel in: 1300

: 0.00...1.00 Speed rpm

LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 225 Rack travel in mm : 7.3 Testina: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm: 225
Rack travel in mm: 7.20...7.40
Rack travel in mm: 2.00
Speed rpm: 325...365 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 600 Rack travel in m: 11.50...11.60 and speed rpm : 1050 Rack travel in m: 10.80...11.00 2nd speed 3rd speed rpm : 800 Rack travel in m: 11.20...11.40 4th speed rpm : 855 Rack travel in m: 10.90...11.20 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050 Speed Del.quantity cm3/: 107.0...111.0 1000 s: (104.5...113.5) RACK STOP ADJUSTMENT rpm : 600 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1140...1155 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 195.0...235.0 1000 s: (191.0...239.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 225 Speed Rack travel in mm : 7.20...7.40 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

Spread cm3 : 3.50 1000 s: (5.50)

**APPLICATION** 

**Omnibus** 

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Note remarks

Test sheet : STE 10,0 e : 14.12.90 Edition

: 28.8.87 Replaces Test oil : ISO-4113

: 0 401 846 863 Combination no.

Injection pump

Pump designation : PE6P110A720RS3204 : 0 411 816 754 EP type number

Governor

Governor design. : RQV250...1100PA413-2

: D 421 813 667 Governer no.

Customer-spec. information

Customer : SNF

: WD615.63 Engine

: 204.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firina order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 4.1...4.3 Del.quantity cm3/ : 1.6...2.1

100 s: (1.4...2.4)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 1.00...1.40 travel mm

rpm : 350 2nd speed travel mm : 1.70...2.30 rpm : 700 3rd speed

travel mm : 4.40...5.00

rpm : 1145 4th speed : 8.40...8.60 travel mm

rpm : 1235 5th speed : 9.40...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

Del.quantity : 102.0...167.0)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 11.60

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 66...74

Testing:

: 100 Speed rpm Minimum rack trave: 5.70 Speed rpm

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 250...330 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 560

Rack travel in m: 11.90...12.00

3rd pressure hPa : 320 Rack travel in m: 10.40...10.60

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rom

Del.quantity cm3/: 175.0...179.0 1000 s: (172.0...182.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 125.0...128.0 1000 s: (122.5...130.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 175.0...195.0

1000 s: (170.0...200.0)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Note remarks : 6-3-5-2-4-1 Firing order : MB 11,0 s10 : 20.12.90 Test sheet Edition Replaces : 11.5.89 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 881 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PE6P110A320LS3835-1 EP type number : 0 411 816 755 BASIC SETTING Governor Governor design. : RQV300...1050PA884 1st speed rpm: 750 Governer no. : 0 421 813 685 Rack travel in mm : 13.00...13.10 Customer-spec. information Del.quantity cm3/: 12.6...12.8 Customer : DAIMLER-BENZ : 0M441 100 s: (12.3...13.0) Engine : 160.0 cm3 : 0.41st version kW Spread : 2100 Rated speed 100 s: (0.7) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0 Rack travel in mm : 8.3...8.6 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) Overflow valve Spread cm3 : 0.4: 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.10...1.30 Test nozzle holder travel mm : 0 681 343 009 : 500 assembly 2nd speed rpm 3.70...4.00 travel mm 3rd speed 800 Opening | rpm pressure, bar : 172...175 5.80...6.10 travel mm rpm : 1090 4th speed : 8.10...8.50 travel mm rpm : 1170 Test lines : 1 680 750 015 5th speed : 9.50...10.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 Control-lever position x Length mm Degree: -1 rpm : 1100 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version

rpm : 750

Speed

Test pressure, bar: 25...27

Del.quantity : 126.0...128.0 1000 : (123.5...130.5)

cm3: 4.00 Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 120...128

Testina:

1st rack travel in: 12.00 rpm : 1095...1110 Speed 2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 92...100

Testing:

Speed rpm Minimum rack trave: 10.30 Speed rpm : 300

Rack travel in mm : 8.80...9.00

CONSTANT REGULATION

rpm : 300...550 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050 Del.quantity cm3/: 138.0...142.0 1000 s: (135.0...145.0)

cm3 : 6.00Spread

1000 s: (9.00)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.00

: 1095...1110 Speed rom

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

APPLICATION

Omnibus

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: 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : STE 10,0 f Phasing : 0-60-120-180-240-300 : 14.12.90 Edition : 19.5.88 : 0.50 (0.75) Tolerance + - ° Replaces Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 401 846 885 BASIC SETTING Injection pump Pump designation : PE6P110A720RS3204 1st speed rpm: 1100 EP type number : 0 411 816 754 Rack travel in mm : 12.60...12.70 Governor Governor design. : RQ300/1100PA412-3 Del.quantity cm3/: 16.2...16.4 Governer no. : 0 421 801 436 100 s: (15.9...16.7) Customer-spec. information Customer : STEYR Spread cm3 : 0.4: WD615.63 Engine 100 s: (0.7) : 204.0 1st version kW rpm : 300.0: 2200 2nd speed Rated speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/ : 2.0...2.5 TEST BENCH REQUIREMENTS 100 s: (1.7...2.7) Test oil Spread cm3 : 0.4inlet temp. °C : 38...42 100 s: (0.7) GUIDE SLEEVE POSITION Overflow valve : 1 417 413 025 Control-lever position Degree: -1 rpm : 600 Inlet press., bar: 1.50 Rack travel in mm : 15.40...16.60 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly Opening . 1st version rpm : 1100 pressure, bar : 172...175 Speed Aneroid pressure h: 900 : 162.0...164.0 Del.quantity 1000 Test Lines : 1 680 750 015 : (159.0...167.0) : 4.00 Spread cm3 1000 : (7.50) Outside diameter x Wall thickness : 6.00X1.50X600 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: : 600 per values Speed rpm Rack travel in mm : 16.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing: 1st rack travel in: 11.60

Speed rpm : 1145...1160 2nd rack travel in: 4.00

rpm

Speed

: 1235...1265

: 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Prestroke mm

4th rack travel in: 1350

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 4.6

Testina:

Speed : 100 rpm Minimum rack trave: 6.10 Speed rpm : 300
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 mom hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 560

Rack travel in m: 11.90...12.00

3rd pressure hPa : 320

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 700 Speed rpm

Del.quantity cm3/: 175.0...179.0 1000 s: (172.0...182.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 125.0...128.0

1000 s: (122.5...130.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.60

: 1145...1160 Speed **UDU** 

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
 1000 s: (170.0...200.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : MB 11,0 w : 15,11,90 Edition : 5.11.90 Replaces : ISO-4113 Test oil

: 0 401 846 918 Combination no.

Injection pump

Pump designation : PE6P110A320LS3851 : 0 411 816 765 EP type number

Governor

Governor design. : RQV300...1050PA884-6

: 0 421 813 832 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441

1st version kW : 160.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6 Spread 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

3rd speed

rpm : 300 1st speed

: 1.00...1.50 travel mm

2nd speed

rpm : 440 : 2.70...3.20 travel mm rpm : 730

travel mm

: 4.70...5.20

4th speed : 1110 rpm

travel mm : 8.00...8.50

: 1360 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 122.0...124.0 Del.quantity 1000 : (119.5...126.5) : 8.50 Spread cm31000 : (13.00) RATED SPEED 1st version Control Lever position degrees: 114...122 Testing: 1st rack travel in: 10.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 83...91 Testing: : 200 Speed rom Minimum rack trave: 8.20 Speed : 300 rom Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 : 300...500 Speed rpm START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 119.0...125.0 1000 s: (119.0...125.0) cm3 : 11.00Spread 1000 s: (14.) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY

: 100

rom

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

:

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Speed

## Note remarks

: DAF 8,3 r Test sheet : 20.12.90 Edition : 21.9.90 Replaces : ISO-4113 Test oil

: 0 401 846 928 Combination no.

Injection pump

Pump designation : PE6P110A720RS3258 : 0 411 816 771 EP type number

Governor

Governor design. : RQV325...1200PA910-1

: 0 421 813 880 Governer no.

Customer-spec. information : DAF Customer

: HT 168 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 12.50...13.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.80...8.00 & maximum rack tra: 12.5...13.5 Difference ° CS : 1.50...3.00

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 12.3...12.5

100 s: (12.1...12.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0 Rack travel in mm : 7.7...8.1 Del.quantity cm3/ : 1.4...1.9

100 s: (1.1...2.1)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1245 1st speed : 8.10...8.30 travel mm

2nd speed rpm : 325

: 0.90...1.30 travel mm

3rd speed

rpm : 500 : 2.90...3.50 travel mm

rpm : 800 4th speed

: 4.60...5.00 travel mm

rpm : 1500 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1240 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

: 123.5...125.5 Del.quantity

1000 : (121.0...128.0)

: 4.00 cm3 Spread

1000:(7.50)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.30

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1345...1375 Speed

4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 79...87

Testing:

rpm : 100 Speed Minimum rack trave: 7.90 Speed rpm

Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

: 340...460 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 13.30...13.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.40

2nd pressure hPa : 370

Rack travel in m: 12.80...12.90

3rd pressure hPa : 240

Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 81.5...83.5 1000 s: (79.0...86.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1240...1250

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 6.30...6.50

Remarks:

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: 4.20...4.30 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.15...4.35) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : DAF 11,7 h2 : 30.11.90 Edition Replaces : 3.8.90 : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Combination no. : 0 401 846 931 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation: PE6P120A320RS3248 EP type number : 0 411 826 792 1st speed rpm: 850 Governor Governor design. : RQV250...1000PA851-5 Rack travel in mm : 11.80...11.90 Governer no. : 0 421 813 877 Del.quantity cm3/: 18.9...19.1 Customer-spec. information 100 s: (18.6...19.4) Customer : DAF Engine : WS 222 Spread cm3 : 0.5: 222.0 100 s: (0.9) 1st version kW Rated speed : 2000 rpm : 250.0 2nd speed Rack travel in mm: 6.6...6.8 TEST BENCH REQUIREMENTS Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) Test oil inlet temp. °C : 38...42 cm3 : 0.8Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 1045 Test nozzle holder 1st speed : 1 688 901 019 : 7.80...8.00 travel mm assembly 2nd speed rpm : 250 : 0.70...1.10 **Opening** travel mm : 207...210 3rd speed : 400 pressure, bar rpm : 2.50...3.10 travel mm : 750 4th speed Orifice plate rom : 4.80...5.20 diameter mm : 0,8 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 075 Control-lever position Degree: -1 rpm : 1075 Outside diameter Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 8.00x2.50x1000 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Speed rpm : 850 Set equal delivery quant. Aneroid pressure h: 1000 per values

: 189.0...191.0

1000 : (186.0...194.0)

: 5.00

: (9.00)

Del.quantity

Spread

cm3

1000

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

RATED SPEED 1st version Control Lever position degrees: 117...125 Testing: 1st rack travel in: 10.80 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Speed rpm: 1120...1150 4th rack travel in: 1250 rpm : 0.00...1.40 Speed LOW IDLE 1 Control Lever position degrees: 79...87 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 250 Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 260...380 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 11.80...11.90 Rack travel mm Measurement 1/min : 600 Speed 1st pressure hPa : -Rack travel in m: 11.10...11.32 2nd pressure hPa : 230 Rack travel in m: 11.40...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 164.0...166.0 1000 s: (161.0...169.0)

1mm rack travel less than full load rack tr: 10.80

LOW IDLE

Speed

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

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rpm : 1040...1050

BREAKAWAY

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : DAF 8,2 b 1 : 20.12.90 Test sheet Edition : 31.8.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 0.50 (0.75) Combination no. : 0 401 846 932 Tolerance + - \* Injection pump BASIC SETTING Pump designation: PE6P120A320RS3183-3 EP type number : 0 411 826 794 1st speed rpm : 850 Governor Rack travel in mm : 12.70...12.80 Governor design. : RQ275/1100PA832-4 Governer no. : 0 421 801 537 Del.quantity cm3/: 21.1...21.3 Customer-spec. information 100 s: (20.8...21.6) Customer : DAF cm3 : 0.5Engine : ks 260 s Spread : 260.0 100 s: (0.9) 1st version kW : 2200 Rated speed 2nd speed rpm : 275.0Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 2.2...2.8 TEST BENCH REQUIREMENTS 100 s: (1.9...3.1) Test oil inlet temp. °C : 38...42 cm3 : 0.8 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 550 Rack travel in mm : 15.20...16.40 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening. : 207...210 1st version pressure, bar Speed rpm : 850 Aneroid pressure h: 1000 Del.quantity : 211.0...213.0 Orifice plate : 0,8 diameter mm 1000 : (208.0...216.0) : 5.00 cm3 Spread Test Lines : 1 680 750 067 1000 : (9.00) Outside diameter RATED SPEED x Wall thickness : 6.00X1.50X1000 1st version x Length mm (A) Injection pump setting values Setting point: Insp. values in parentheses Speed rpm Set equal delivery quant. Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.70

Speed rpm : 1125...1140 2nd rack travel in: 4.00

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1215...1245 Speed 4th rack travel in: 1350 : 0.00...1.40 Speed rpm

LOW IDLE 1

Setting point w/out bumper spring

: 275 Speed rpm Rack travel in mm: 6.8

Testing:

Speed : 100 rom Minimum rack trave: 7.80 : 275 rpm

Rack travel in mm: 6.70...6.90 Rack travel in mm: 2.00

: 380...420 Speed rpm

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 13.00...13.10 nd speed rpm : 1100 Rack travel in m: 12.90...13.10

2nd speed nom

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 1000 Pressure

: 12.70...12.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 500 Rack travel in m: 12.10...12.20

3rd pressure hPa : 340

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

: 600 Speed rpm

Del.quantity cm3/: 150.0...152.0

1000 s: (147.0...155.0)

**BREAKAWAY** 

1st version 1mm rack travel less than full load rack tr: 11.70

rpm : 1125...1140 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 260.0...300.0 1000 s: (256.0...304.0)

LOW IDLE

: 275 Speed rpm

Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 22.5...28.5 1000 s: (19.5...31.5)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: HAE 12.0 a : 20.12.90 Test sheet Edition Replaces : 16.8.90 : ISO-4113 Test oil

Combination no. : 0 401 846 933

Injection pump

Pump designation : PE6P110A320RS3260

: 0 411 816 775 EP type number

Governor

Governor design. : RQ250/1050PA969 : 0 421 801 538 Governer no.

Customer-spec. information Customer : HAEP

Engine : X6130 NA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 13.5...13.8

100 s: (13.2...14.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm: 8.5...8.9 Del.quantity cm3/: 2.7...3.2

100 s: (2.4...3.4)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 550

Speed

Rack travel in mm : 13.80...15.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 135.0...138.0 Del.quantity

1000 ; (132.5...140.5)

: 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 14.6

Testing:

1st rack travel in: 11.10

rpm : 1095...1110 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

Speed : 0.00...1.80 rpm

LOW IDLE 1

Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 8.7 Testing: Speed : 100 rpm Minimum rack trave: 10.20 Speed rpm : 250 Rack travel in mm : 8.60...8.80 Rack travel in mm : 2.00 Speed rpm : 360...400 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.10...12.20 2nd speed rpm : 693 Rack travel in m: 13.00...13.20 of speed rpm : 760 Rack travel in m: 12.60...12.90 3rd speed 4th speed rpm : 870 Rack travel in m: 12.25...12.55 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 138.0...142.0 1000 s: (135.0...145.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.10 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del-quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0) Remarks:

: 3.80...3.90 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Note remarks Test sheet : ENA 11,9 k : 23.11.90 Edition : 21.9.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 0 401 846 934 Tolerance + - ° : 0.50 (0.75) Combination no. Injection pump Time to cyl. no. : 1 Pump designation: PE6P120A320RS3176-4 EP type number : 0 411 826 795 BASIC SETTING Governor Governor design: RQ250/1000PA218-3 1st speed rpm: 1000 : 0 421 801 541 Governer no. Rack travel in mm : 10.20...10.30 Customer-spec. information Del.quantity cm3/: 17.4...17.6 Customer : ENASA : 96 T4 EZ 100 s: (17.1...17.9) Engine : 176.0 cm3 : 0.51st version kW Spread Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 2.5...3.1 Test oil inlet temp. °C : 38...42 100 s: (2.2...3.4) cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 s: (1.2) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -1 : 0 688 901 019 rpm : 600 assembly Speed Rack travel in mm : 15.60...16.40 **Opening** FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar 1st version Orifice plate Speed rpm : 1000 Aneroid pressure h: 700 diameter mm : 0,8 : 174.0...176.0 Del.quantity 1000 : (171.0...179.0) Test Lines : 1 680 750 067 : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed per values \_\_\_ rpm : 600 Rack travel in mm: 16.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27

1st rack travel in: 9.20

rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 7.50 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 350...390 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 700 Pressure Rack travel mm : 10.20...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.30...8.60 2nd pressure hPa : 300 Rack travel in m: 9.90...10.00 3rd pressure hPa : 185 Rack travel in m: 8.80...9.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Del.quantity cm3/: 117.0...119.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (146.0...174.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm: 250 Rack travel in mm: 5.90...6.10

Remarks:

Note remarks

Test sheet Edition : VOL 10,2 b : 23.11.90

Replaces

Test oil : ISO-4113

: 0 401 846 939 Combination no.

Injection pump

Pump designation : PE6P110A320RS3265 : 0 411 816 778 EP type number

Governor

Governor design. : RQV300...1050PA232-5

: D 421 813 895 Governer no.

Customer-spec. information : VME Customer

: TD102KCE Engine

: 180.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm: 12.20...12.30

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.7)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.9...2.3

100 s: (1.7...2.5) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 1.30...1.70 travel mm

rpm : 450 2nd speed

: 2.40...3.00 travel mm

rpm : 700 3rd speed

: 4.30...4.90 travel mm

rpm : 1100 4th speed

: 7.80...8.00 travel mm

5th speed : 1200 rpm

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1140

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 152.0...154.0 1000 : (149.0...157.0)

cm3: 4.50 Spread 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 104...112 Testing: 1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 : 1185...1215 Speed rpm 4th rack travel in: 1300 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 74...82 Testing: Speed : 100 rpm Minimum rack trave: 6.60 : 300 rom Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 300...410 Speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rpm Pressure Rack travel mm : 12.20...12.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.70 2nd pressure hPa : 130
Rack travel in m: 10.90...11.00
3rd pressure hPa : 250
Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 116.0...118.0 1000 s: (113.0...121.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0

1000 s: (156.0...194.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 19.0...23.0
1000 s: (17.0...25.0)

Spread cm3 : 3.00 1000 s: (6.00)

## Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90 mm

Speed

Aneroid pressure h: 700

Aneroid pressure h: -

Speed rpm: 1050 Del.quantity cm3/: 138.0...142.0 1000 s: (136.0...144.0)

rpm : 700

Note remarks

Test sheet : STE 10,0 h1 : 30.11.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 940

Injection pump

Pump designation: PE6P110A720RS3243 : 0 411 816 770 EP type number

Governor

Governor design. : RQV250...1100PA413-6

: 0 421 813 898 Governer no.

Customer-spec. information : SNF Customer

: WD615.63 Engine

: 204.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9) cm3 : 0.4

Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 : 0.90...1.30 travel mm

: 350 2nd speed rpm travel mm : 1.70...2.30

3rd speed rpm : 700

travel mm : 4.40...5.00

rpm : 1145 4th speed : 8.30...8.50 travel mm

rpm : 1250 5th speed

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1150 Speed

Rack travel in mm : 14.20...16.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

Del.quantity : 164.0...166.0 1000 : (161.0...169.0)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: ?

Testing:

Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

Testina:

rpm : 100 Speed Minimum rack trave: 6.00 rpm : 250 Speed

Aneroid/Altitude Compensator Test

1st version

rpm hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Rack travel in m: 11.90...12.00

3rd pressure hPa : 325

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 700 Speed

1st rack travel in: 11.70 Speed rpm: 1140...1150 2nd rack travel in: 4.00

rpm : 1240...1270

LOW IDLE 1 Control lever

position degrees: ?

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 250...350 Speed

Setting

: 500 Speed

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80 2nd pressure hPa : 500

Rack travel in m: 10.40...10.60

G10

Del.quantity cm3/: 174.0...178.0

1000 s: (171.0...181.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 120.0...122.0
1000 s: (117.0...125.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 232.0...272.0 1000 s: (228.0...276.0)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: STE 10,0 g1 : 30.11.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 401 846 941 Combination no.

Injection pump

Pump designation : PE6P110A720RS3243 : 0 411 816 770 EP type number

Governor

Governor design. : RQ300/1100PA412-5

: 0 421 801 562 Governer no.

Customer-spec. information

: SNF Customer

: WD615.63 Engine

: 204.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80,...2.90 Prestroke m

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 3.9...4.1 Del.guantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.4 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 14.60...15.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200

Aneroid ... Del.quantity 1000 : 164.0...166.0 : (161.0...169.0)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 15.0

Testing:

1st rack travel in: 11.70 Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

mpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 4.0

Testing:

: 100 rom Speed Minimum rack trave: 5.50 : 300 Speed rpm

Rack travel in mm : 3.90...4.10

Rack travel in mm: 2.00

rom : 350...390 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom Pressure hPa : 1200

Rack travel mm : 12.70...12.80

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 500 Rack travel in m: 11.90...12.00 3rd pressure hPa : 325 Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm: 700 Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 232.0...272.0 1000 s: (228.0...276.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 3.90...4.10 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : MB 11,0 x 1 Edition : 20.12.90

Replaces

: ISO-4113 Test oil

: 0 401 846 942 Combination no.

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQ300/1050PA187-33

: 0 421 801 574 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M441 Engine

: 151.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 11.00...11.10

Del.guantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

Spread cm3 : 0.8

100 s: (1.3)

rpm : 300.02nd speed

Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed

Rack travel in mm: 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 1050

: 118.0...120.0 Del.quantity

1000 : (115.5...122.5)

: 8.50 cm3 Spread

1000 : (13.00)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm: 13.5

Testing: 1st rack travel in: 10.00 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.6 Testing: rpm : 200 Speed Minimum rack trave: 8.20 rpm : 300 Speed Rack travel in mm: 6.30...6.90
Rack travel in mm: 2.00
Speed rpm: 390...430 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 117.0...122.0 1000 s: (114.0...125.0) cm3 : 11.00 Spread 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Note remarks

: MB 14,6 a 3 Test sheet : 20.07.90 Edition : 24.2.89 Replaces Test oil : ISO-4113

: 0 401 848 756 Combination no.

Injection pump

Pump designation : PE8P110A320LS3802-10

: 0 411 818 710 EP type number

Governor

: RQV300...1150PA486-3 : 0 421 813 411 Governor design.

Governer no.

Customer spec. information

: MERCEDES-BENZ Customer

: 0M422 Engine

: 184.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 11.20...11.40

Del.quantity cm3/: 9.2...9.6

100 s: (8.9...9.9)

Spread cm3:?

100 s: (?)

rpm : 300.02nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.60...2.00 travel mm rpm : 800 2nd speed

travel mm : 5.80...6.30 : 1200 3rd speed rpm

travel mm : 8.00...8.60

: 1250 4th speed rpm

: 9.00...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

; 92.0...96.0 1000 : (89.0...99.0) Del.quantity

RATED SPEED

1st version

Control Lever

position degrees: 50...58

Testing:

1st rack travel in: 10.00

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 18...26

Testing:

Speed : 100 rpm

Minimum rack trave: 9.70

: 300 Speed rpm

Rack travel in mm : 8.00...8.20

Rack travel in mm: 2.00

Speed : 410...480 rpm

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 11.00...11.10

: 600 2nd speed rpm

Rack travel in m: 11.20...11.40

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150 Del.quantity cm3/: 112.0...116.0

1000 s: (109.0...119.0)

cm3 : 7.00Spread

1000 s: (10.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Note remarks

: MB 14,7 L 3 : 15.11.90 Test sheet Edition

: 5.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 848 806

Injection pump

Pump designation : PE8P110A320LS3846-1

: 0 411 818 719 EP type number

Governor

Governor design. : RQ300/1050PA187-28

: 0 421 801 492 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 Engine

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55) Rack travel in mm : 9.00...12.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasina

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) Spread cm3: 0.6

100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 650 Rack travel in mm: 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 122.0...124.0 Del.quantity 1000 : (119.5...126.5)

: 8.50 Spread cm3

1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5 Testing:

1st rack travel in: 10.20

Speed rpm : 1080...1090

2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1300

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.6

Testing:

Speed : 200 rpm Minimum rack trave: 8.20 Speed rpm : 300

Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00

: 390...430 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 119.0...125.0

1000 s: (119.0...125.0)

Spread cm3 : 11.00

1000 s: (14.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Note remarks

: MB 14,7 r Test sheet : 15.11.90 Edition Replaces : 5.11.90 Test oil : ISO-4113

Combination no. : 0 401 848 808

Injection pump

Pump designation: PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

: RQV300...1050PA884-5 Governor design.

: 0 421 813 831 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 Engine

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test on

inlet tero. °C : 38...42

Overflyw valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00 : 8- 7- 2- 6- 3- 5-

Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (1.1)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 1.00...1.50 travel mm

rpm : 440 2nd speed

: 2.70...3.20 travel mm

3rd speed rpm : 730

: 4.70...5.20 travel mm

rpm : 1110 4th speed

: 8.00...8.50 travel mm

rpm : 1360 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 122.0...124.0 Del quantity 1000 : (119.5...126.5) cm3 : 8.50 1000 : (13.00) Spread RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 10.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 rpm Minimum rack trave: 8.50 rpm : 300 Rack travel in mm : 6.30...6.90 CONSTANT REGULATION Speed rpm : 300...500 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 119.0...125.0 1000 s: (119.0...125.0) cm3 : 11.00 Spread 1000 s: (14.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

8

### Note remarks

: MB 14,7 L 4 Test sheet : 20.12.90 Edition

Replaces

Test oil : ISO-4113

: 0 401 848 813 Combination no.

Injection pump

Pump designation : PE8P110A320LS3846-1

EP type number

: 0 411 818 719 Governor

Governor design. : RQ300/1050PA187-30

Governer no. : 0 421 801 552

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 Engine

1st version kW : 195.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.4...11.6

100 s: (11.4...11.6)

Spread cm3 : 0.8

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (1.1)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 114.0...116.0 Del.quantity

1000 : (114.0...116.0)

cm3 : 8.50Spread

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm: 13.5

1st rack travel in: 10.10

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.00...2.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.3 Testing: Speed rpm: 200 Minimum rack trave: 9.20 Speed rpm : 300 Rack travel in mm : 7.00...7.60 Rack travel in mm: 2.00 rpm : 400...440 Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 110.0...116.0 1000 s: (107.0...119.0) cm3 : 11.00 Spread 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.10 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

: MB 14,7 c 9 Test sheet Edition : 30.11.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 848 814

Injection pump

Pump designation : PE8P110A320LS3842 EP type number : 0 411 818 714

Governor

Governor design. : RQ300/1050PA187-31

: 0 421 801 553 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442

: 195.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening 1

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15) Rack travel in mm : 9.00...12.00

3- 5-Firing order : 8- 7- 2- 6-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 8.2...8.5

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 2.50...2.70

rpm : 490 2nd speed

: 6.90...7.10 travel mm

rpm : 1109 3rd speed

: 7.40...7.60 travel mm

rpm : 1230 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 650 Speed

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 104.0...106.0 Del.quantity

1000 : (101.5...108.5)

cm3 : 4.00Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 650 Speed rpm Rack travel in mm: 14.0

Testing:

1st rack travel in: 10.80

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1200

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

: 300 Speed rpm Rack travel in mm: 6.9

Testing:

Speed rpm : 200 Minimum rack trave: 9.00 rpm : 300 Speed

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00

: 400...440 Speed rpm

START CUT-OUT

 $1/\min : 1 (0)$ Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050 Del.quantity cm3/ : 118.0...122.0 1000 s: (115.0...125.0)

Spread cm3 : 6.00

1000 s; (9.00)

RACK STOP ADJUSTMENT

Speed rpm : 600

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 d10 : 30.11.90 Edition Replaces Test oil : ISO-4113 : 0 401 848 815 Combination no. Injection pump Pump designation : PE8P110A320LS3842 : 0 411 818 714 EP type number Governor Governor design. : RQV300...1050PA884~8 : 0 421 813 889 Governer no. Customer spec. information : MERCEDES-BENZ Customer : 0M442 Engine : 195.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Opening | : 172...175 pressure, bar Test Lines : 1 680 750 015

rest lines : 1 080 750 015

Outside diameter x Wall thickness x Length mm

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.00...4.10 : (3.95...4.15) Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 8.2...8.5 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 300 travel mm : 1.00...1.50

2nd speed rpm: 608

travel mm : 4.80...5.30

3rd speed rpm : 820

travel mm : 5.90...6.40

4th speed rpm : 1107

travel mm : 8.30...8.80

5th speed rpm: 1280

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm: 1130

Rack travel in mm ; 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750

Del.quantity : 104.0...106.0 1000 : (101.5...108.5) cm3 : 4.00 Spread 1000 : (7.50)RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 10.80 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed : 200 riom Minimum rack trave: 10.00 : 300 Speed rom Rack travel in mm : 6.80...7.00 CONSTANT REGULATION

Speed rpm: 300...450

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 1050 Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) Spread cm3 : 6.00 1000 s: (9.00)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

:

#### Note remarks

Test sheet : DAO 18,1 a Edition : 07.01.91

Replaces

: ISO-4113 Test oil

: 0 401 849 184 Combination no.

Injection pump

Pump designation : PE10P110A520/5LS858

EP type number : 0 411 819 022

Governor

Governor design. : RQ900PA988 : 0 421 801 573 Governer no.

Customer-spec. information Customer : DAFWOO

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2,95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-8-7-6-3-5-2

: 0-45-72-117-144-189-Phasing

216-261-288-333

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 15.3...15.6

100 s: (15.0...15.8)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 250.0 2nd speed

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.1...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.4100 s: (0.7)

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 153.0...156.0 Del.quantity

1000 : (150.5...158.5)

cm3 Spread : 4.00 1000 : (8.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 12.10

Speed rpm : 900...905 2nd rack travel in: 7.20

rpm : 932...946 Speed

4th rack travel in: 1000

rpm : 0.00...1.00Speed

### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 900...905 Speed

HIGH IDLE

1st version

Rack travel in mm : 7.10...7.30

cm3 : 6.00Spread

1000 s: (8.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 18,3 n 1 Test sheet Edition : 30.11.90 Réplaces : ISO-4113 Test oil : 0 401 849 751 Combination no. Injection pump Pump designation : PE10P110A320LS3844 : 0 411 819 710 EP type number Governor Governor design. : RQ300/1050PA187-32 : 0 421 801 554 Governer no. Customer-spec. information : MERCEDES-BENZ Customer : OM 443 Engine 1st version kW : 243.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 130...150 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 10- 9- 4- 1- 8- 7-Firing order 6-3-5-2 : 0-45-72-117-144-189-Phasing 216-261-288-333 Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 10 BASIC SETTING rpm: 750 1st speed Rack travel in mm : 11.60...11.70 Del.guantity cm3/: 10.2...10.4 100 s: (9.9...10.6) cm3 : 0.4Spread 100 s: (0.7) 2nd speed rpm : 300.0 Rack travel in mm : 8.0...8.3 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 600 Speed Rack travel in mm : 13.60...14.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 750 : 102.0...104.0 Del.quantity 1000 : (99.5...106.5) Spread cm3 : 4.00 1000 : (7.50) RATED SPEED 1st version Setting point: : 600 Speed rpm Rack travel in mm: 14.0

1st rack travel in: 10.60

rpm : 1090...1100 Speed 2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1200

rpm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.9

Testing:

rpm : 200 Speed Minimum rack trave: 8.50 rpm : 300

Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 : 400...440 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1050 Speed

Del.quantity cm3/: 116.0...120.0

1000 s: (113.0...123.0)

Spread cm3 : 6.00 1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Note remarks

Test sheet : STE 10,0 a1 Edition : 14.12.90

Replaces

: ISO-4113 Test oil

: 0 401 856 144 Combination no.

Injection pump

Pump designation : PE6P100A721RS398 : 0 411 806 187 EP type number

Governor

Governor design. : RQ300/1300PA481R : 0 421 801 105 Governer no.

Customer-spec. information : SNF Customer

: WD615.00 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 11.50...11.60

Del.guantity cm3/: 9.7...9.9

100 s: (9.4...10.2)

cm3 : 0.4Spread

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 8.7...8.9 Del.quantity cm3/ : 1.5...2.1 100 s: (1.2...2.4)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 97.0...99.0 Del.quantity 1000 : (94.0...102.0)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

rom

Rack travel in mm: 16.0

Testina:

1st rack travel in: 10.50 Speed rpm : 1345...1355

2nd rack travel in: 4.00

: 1400...1430 Speed rom

4th rack travel in: 1550

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 6.0 Testing:

Speed rpm : 100

Minimum rack trave: 7.50
Speed rpm: 300
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 395...435

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1300 Rack travel in m: 11.50...11.60

2nd speed rpm : 1030

Rack travel in m: 11.50...11.80

rpm : 900 3rd speed

Rack travel in m: 11.70...12.00

4th speed rpm : 600

Rack travel in m: 12.00...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 83.0...87.0

1000 s: (80.5...89.5)

cm3 : 6.00Spread 1000 s: (10.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.50

rpm : 1345...1355 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...140.0 1000 s: (116.0...144.0)

Rack travel in mm: 15.00...18.00

Note remarks

: STE 9,7 b 1 Test sheet : 14,12,90 Edition : 8.9.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 856 700

Injection pump

Pump designation : PE6P110A721RS3101

: 0 411 816 725 EP type number

Governor

Governor design. : RQ300/1200PA412 : 0 421 801 172 Governer no.

Customer-spec. information Customer : SNF

Engine : WD615.67

1st version kW : 206.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 700

: 162.0...164.0 Del.quantity

1000 : (159.0...167.0)

: 4.00 cm3 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 16.0

Testing:

1st rack travel in: 11.00 Speed rpm : 1245...1260 2nd rack travel in: 4.00

Speed rpm : 1325...1355

**HD5** 

4th rack travel in: 1450 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.0 Testing: Speed rpm: 100 Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rom : 405...445 Speed TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.00...12.10 2nd speed nom : 600 Rack travel in m: 12.60...12.90 rpm : 985 3rd speed Rack travel in m: 12.40...12.60 4th speed rpm : 1075 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Settina rpm : 500 hPa : 700 Speed **Lbw** Pressure Rack travel mm : 12.40...12.60 Measurement  $1/\min : -00$ Speed Rack travel in m: 10.10...10.30 2nd pressure hPa : 420 Rack travel in m: 11.50...11.60 3rd pressure hPa : 330 Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

rpm : 700 Speed Del.quantity cm3/: 165.0...169.0

1000 s: (163.0...171.0)

Speed rpm : 700 Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

**BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1245...1260 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 205.0...235.0 1000 s: (201.0...239.0) Rack travel in mm : 17.30...17.70 Remarks:

Aneroid pressure h: -

Note remarks

Test sheet : STE 9,7 b : 16.11.90 : 10..8.90 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 401 856 701

Injection pump

Pump designation : PE6P110A721RS3101 : 0 411 816 725 EP type number

Governor

Governor design. : RQV250...1200PA413

Governer no. : 0 421 813 333

Customer-spec. information Customer : STEYR

: WD615.67 Engine

1st version kW : 206.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 250.02nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0) Spread

cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1290

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 700

Del.quantity : 702.0...167.0)

cm3 : 4.00 1000 : (8.00) Spread

RATED SPEED

1st version Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.00

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1335...1365 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

H07

LOW IDLE 1 Control lever position degrees: 9...17 Testina: : 100 Speed mor: Minimum rack trave: 7.50 : 250 Speed mort Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 rom : 360...420 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.00...12.10 2nd speed rpm : 500 Rack travel in m: 12.50...12.60 3rd speed rpm : 880 Rack travel in m: 12.20...12.30 4th speed rpm : 1060 Rack travel in m: 12.00...12.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed חסח hPa : 700 Pressure : 12.40...12.60 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 420 Rack travel in m: 11.50...11.60
3rd pressure hPa : 330
Rack travel in m: 10.60...11.00 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rom : 700 Del.quantity cm3/: 165.0...169.0 1000 s: (163.0...171.0)

Del.quantity cm3/: 120.0...124.0 1000 s: (118.0...126.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 205.0...235.0

1000 s: (201.0...239.0) Rack travel in mm : 17.30...17.70

Remarks:

:

Speed

Aneroid pressure h: -

rpm : 700

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 10,0 L Edition : 23.11.90 Replaces : ISO-4113 Test oil Combination no. : 0 401 876 777 Injection pump Pump designation : PE6P120A320RS3261 EP type number : D 411 826 796 Governor Governor design. 11 : 0 421 833 346 Governer no. Customer-spec. information Customer : PENTA : TAMD 102 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 : 207...210 pressure, bar : 0,8 diameter mm : 1 680 750 067 : 6.00x1.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: RSV250...1100P0A374-**Opening** Orifice plate Test lines Outside diameter x Wall thickness x Length mm BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 3.35...3.45 Prestroke mm : (3.30...3.50)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 900 1st speed Rack travel in mm : 11.80...11.90 Del.quantity cm3/: 24.7...24.9 100 s: (24.4...25.2) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 6.2...6.4 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.5 Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.40 Governor spring pre-tension Click setting x : 2.25 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 1500 Del.quantity : 247.0...249.0 Del.quantity : 247.0...252.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 91...99 Testing: 1st rack travel in: 10.80

rpm : 1120...1130

Speed

2nd rack travel in: 4.00 rpm : 1160...1170 Speed 3rd rack travel in: 4.00 rpm : 1170...1180 Speed 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring : 250 Speed rpm Rack travel in mm : 5.8 Speed rpm : 250 Rack travel in mm : 6.20...6.40 Rack travel in mm: 2.00 Speed : 390...450 rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 1500 Rack travel mm : 11.80...11.90 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 7.60...7.80 2nd pressure hPa : 210 Rack travel in m: 8.00...8.10 3rd pressure hPa : 900 Rack travel in m: 11.30...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 900 Del.quantity cm3/: 137.0...139.0 1000 s: (134.0...142.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80

Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90 **APPLICATION** Navy

Speed rpm : 1120...1130

STARTING FUEL DELIVERY

: 100 Speed rom

H10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : PEN 12,2 d1 Test sheet : 14.12.90 Edition Replaces : ISO-4113 Test oil : 0 401 876 780 Combination no. Injection pump Pump designation : PE6P120A320RS3206-1 : 0 411 826 775 EP type number Governor Governor design. : RSV250...900P4A521-1 Governer no. : 0 421 833 348 Customer-spec. information Customer : PENTA : TID121LP Engine 1st version kW : 295.0 Rated speed : 1800 TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses

: 3.50...3.60 Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 12.20...12.30 Del.quantity cm3/: 29.8...30.0 100 s: (29.5...30.3) Spread cm3 : 0.5100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.5Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 5.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed : 298.0...300.0 Del.quantity 1000 : (295.0...303.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 103...111

1st rack travel in: 11.20

per values

Set equal delivery quant.

rpm : 945...955 Speed 2nd rack travel in: 4.00 Speed rpm: 985...1015 4th rack travel in: 1150 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 74...82 Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 4.3

Speed rpm: 300
Rack travel in mm: 4.70...4.90
Rack travel in mm: 2.00
Speed rpm: 340...400

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 945...955 Speed

# STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 265.0...295.0
 1000 s: (261.0...299.0)

### Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

11111

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 s 2 Edition : 20.12.90 Replaces : ISO-4113 Test oil Combination no. : 0 401 878 715 Injection pump Pump designation : PE8P110A320LS3842-1 EP type number : 0 411 818 716 Governor Governor design. : RSV350...1050P0A824-13 : 0 421 833 341 Governer no. Customer spec. information : MERCEDES-BENZ Customer : 0M442 Engine 1st version kW : 213.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 0 681 343 009 assembly Openina : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15) Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order : 0-45-90-135-180-225-Phasing : 270-315 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING rpm : 10301st speed Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 13.7...13.9 100 s: (13.4...14.1) cm3 : 0.4Spread 100 s: (0.8) rpm : 350.0 2nd speed Rack travel in mm: 8.1...8.7 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4) cm3 : 0.4Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1030 Speed : 137.0...139.0 Del.quantity 1000 : (134.5...141.5) cm3 : 4.00 Spread 1000 : (8.00)RATED SPEED 1st version Control lever position degrees: 91...99

Testing:

1st rack travel in: 11.90

rpm : 1090...1100

2nd rack travel in: 4.00 Speed rpm: 1160...1190 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 8.4 Testina: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 8.30...8.50
Rack travel in mm : 2.00 Speed rpm : 410...470 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 124.0...128.0 1000 s: (121.0...131.0) cm3 : 6.00Spread 1000 s: (9.00) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1090...1100 Speed STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

H14

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2 Note remarks Test sheet : MAN 10,0 b2 Edition : 14.12.90 : 31.7.90 : ISO-4113 Replaces : 0-72-144-216-288 Test oil Phasing : 0 402 035 025 Tolerance + - ° : 0.50 (0.75) Combination no. Time to cyl. no. : 5 Injection pump Pump designation : PES5P120A720/3LS512 : 0 412 025 021 BASIC SETTING EP type number Governor rpm: 750 Governor design. : RQV300...950PA876-8 1st speed : D 421 813 868 Governer no. Rack travel in mm : 11.20...11.30 Customer-spec. information Del.quantity cm3/: 21.9...22.1 : MAN Customer 100 s: (21.6...22.4) Engine : D2865LFO/LU/01 : 198.0 cm3 : 0.51st version kW Spread : 1900 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 4.0...4.4 Test oil : 38...42 Del.quantity cm3/: 1.7...2.3 inlet temp. °C 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly 1st speed rpm : 9.70...9.90 travel mm Opening : 207...210 300 2nd speed pressure, bar rpm 1.00...1.20 travel mm 3rd speed 500 Orifice plate rpm : 3.40...4.00 travel mm diameter mm : 0,8 rpm : 750 4th speed : 6.60...7.00 travel mm Test Lines : 1 680 750 067 rpm : 1250 5th speed : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00X1.50X1000 Control-lever position x Lenath mm Degree: -1 rpm : 1020 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 Speed rpm : 750

Aneroid pressure h: 1000

Del.quantity : 219.0...221.0 Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 296...304 Testing: 1st rack travel in: 10.10 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1040...1070 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed Control Lever position degrees: 253...261 : 100 mon rpm : 320...440 : 0.10 1st speed rpm : 950 Rack travel in m: 11.10...11.20 Rack travel in m: 11.20...11.30 Compensator Test : 500 rpm hPa : 1000 : 11.20...11.30

1000 : (216.0...224.0) LOW IDLE 1 Testing: Speed Minimum rack trave: 5.70 Speed rpm : 300 Rack travel in mm : 4.10...4.30 CONSTANT REGULATION Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 2nd speed rpm : 750 Aneroid/Altitude 1st version Setting Speed Pressure Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 7.90...8.10 2nd pressure hPa : 110 Rack travel in m: 8.30...8.40

3rd pressure hPa : 350 Rack travel in m: 10.20...10.40

Speed Speed

START CUT-OUT 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 950 Del.quantity cm3/ : 216.0...220.0 1000 s: (213.0...223.0) Aneroid pressure h: 1000 : 600 rpm Del.quantity cm3/: 210.0...216.0 1000 s: (207.0...219.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0) rpm : 300 1000 s: (14.0...26.0) cm3 : 8.00

LOW IDLE

Speed Rack travel in mm : 4.00...4.40 Del.quantity cm3/: 17.0...23.0 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

: MAN-NR. 3-7046

Note remarks

: MAN 10,0 d Test sheet : 20.12.90 Edition

Replaces Test oil

: ISO-4113

Combination no.

: 0 402 035 026

Injection pump

Pump designation : PES5P120A720/3LS528

EP type number

: 0 412 025 022

Governor

Governor design. : RQ325/950PA813-18 : 0 421 801 563

Governer no.

Customer-spec. information : MAN

: 1900

Engine

Customer

: D2865LF04 / LU04

1st version kW Rated speed

: 198.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 13.00...14.00

Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 3.8...4.2 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

: 221.0...223.0 Del.quantity 1000 : (218.0...226.0)

cm3 : 5.00

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.40

: 995...1010 Speed rom 2nd rack travel in: 4.00 : 1040...1070 Speed rpm 4th rack travel in: 1200 Speed rom : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring Speed rom Rack travel in mm: 4.0 Testing: Speed : 100 rom Minimum rack trave: 5.50 : 325 rpm Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00 : 350...390 Speed rom TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 600 1st speed Rack travel in m: 11.90...12.10 2nd speed rpm : 950 Rack travel in m: 11.40...11.50 : 800 3rd speed rpm Rack travel in m: 11.60...11.80 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 11.40...11.50 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 7.90...8.10 2nd pressure hPa : 150 Rack travel in m: 8.30...8.40 3rd pressure hPa : 490 Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 245 (265) Speed

FUEL DELIVERY CHARACTERISTICS

rpm : 950

Aneroid pressure h: 1000

Del.quantity cm3/: 227.0...233.0 1000 s: (224.0...236.0) Aneroid pressure h: 1000 Speed : 750 rpm Del.quantity cm3/: 225.0...231.0 1000 s: (222.0...234.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 995...1010 **beea**2 STARTING FUEL DELIVERY Speed rpm : 100 Del.guantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE Speed : 325 rpm Rack travel in mm : 3.80...4.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : MAN-NR. 3-7056 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

1st version

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65) Rack travel in mm : 13.00...14.00 Firing order : 1-3-5-4-2 Note remarks Test sheet : MAN 10,0 e Edition : 20.12.90 Replaces : ISO-4113 : 0-72-144-216-288 Test oil Phasing Combination no. : 0 402 035 027 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS528 EP type number : 0 412 025 022 BASIC SETTING Governor Governor design. : RQV325...1000PA876-9 1st speed rpm : 600Governer no. : 0 421 813 899 Rack travel in mm : 11.40...11.50 Customer-spec. information Del.quantity cm3/: 22.1...22.3 Customer : MAN : D2865LF04 / LU04 100 s: (21.8...22.6) Engine cm3 : 0.5: 198.0 1st version kW Spread Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0 Rack travel in mm : 3.8...4.2 Del.quantity cm3/ : 1.7...2.3 Test oil : 38...42 inlet temp. °C 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 995 1st speed : 9.60...9.80 travel mm **Opening** rpm : 325 : 207...210 2nd speed pressure, bar : 0.70...1.10 travel mm rpm : 550 3rd speed Orifice plate : 3.80...4.40 diameter mm : 0,8 travel mm rpm : 800 4th speed : 7.00...7.40 travel mm : 1 680 750 067 rpm : 1300 Test lines 5th speed : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1030 Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version rpm : 600 Test pressure, bar: 30...32 Speed

Aneroid pressure h: 1000

Del.quantity : 221.0...223.0 1000 : (218.0...226.0) : 5.00 Spread cm3 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 296...304 Testina: 1st rack travel in: 10.40 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 252...260 Testing: Speed rpm Minimum rack trave: 5.50 Speed CDW Rack travel in mm : 3.90...4.10 CONSTANT REGULATION Speed rpm : 340...460 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 11.40...11.50 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 7.90...8.10 2nd pressure hPa : 150 Rack travel in m: 8.30...8.40 3rd pressure hPa : 490 Rack travel in m: 10.20...10.50 START CUT-OUT Speed 1/min: 245 (265) FUEL DELIVERY CHARACTERISTICS

1st version

H20

Aneroid pressure h: 1000 rpm : 950 Speed Del.quantity cm3/: 227.0...233.0 1000 s: (224.0...236.0) Aneroid pressure h: 1000 Speed : 750 rom Del.quantity cm3/: 225.0...231.0 1000 s: (222.0...234.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 129.0...131.0 1000 s: (126.0...134.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 990...1000 Speed STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE : 325 Speed rpm Rack travel in mm : 3.80...4.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

: MAN-NR. 3-7057

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 13.00...14.00 Note remarks Firing order : 1-3-5-4-2 Test sheet : MAN 10,0 e1 Edition : 14.12.90 Replaces : 0-72-144-216-288 Test oil : ISO-4113 Phasing : 0.50 (0.75) Combination no. : 0 402 035 028 Tolerance + - ° Injection pump Time to cyl. no. : 5 Pump designation : PESSP120A720/3LS528 : 0 412 025 022 BASIC SETTING EP type number Governor Governor design. : RQV325...1000PA876-1 rpm: 750 1st speed : 0 421 813 900 Governer no. Rack travel in mm : 11.00...11.10 Customer spec. information Del.quantity cm3/: 21.5...21.7 Customer : MAN 100 s: (21.2...22.0) Engine : D2865LF/LU05 1st version kW : 198.0 cm3 : 0.5Spread Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm: 3.8...4.2 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) cm3 : 0.8 Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL rpm : 1045 1st speed **Opening** travel mm : 9.60...9.80 : 207...210 325 pressure, bar 2nd speed rpm : : 0.70...1.10 travel mm rpm : 550 : 3.50...4.10 Orifice plate 3rd speed diameter mm : 0,8 travel mm 4th speed rpm : 800 : 6.50...6.90 travel mm rpm : 1300 Test Lines : 1 680 750 067 5th speed : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 rpm : 1080 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 rpm : 750

Speed

Aneroid pressure h: 1000

: 215.0...217.0 Del.quantity 1000 : (212.0...220.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 10.00 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 252...260 Testing: : 100 Speed rpm Minimum rack trave: 5.50 Speed COM Rack travel in mm : 3.90...4.10 CONSTANT REGULATION : 340...460 Speed rom Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 1000 Pressure Rack travel mm : 11.00...11.10 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90 2nd pressure hPa : 100 Rack travel in m: 9.10...9.20

3rd pressure hPa : 350 Rack travel in m: 10.40...10.70 START CUT-OUT 1/min : 245 (265) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 Speed : 1000 rpm Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Aneroid pressure h: 1000 Speed : 550 rpm Del.quantity cm3/: 205.0...211.0 1000 s: (202.0...214.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00

rpm : 1040...1050 Speed STARTING FUEL DELIVERY

Speed rpm Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.80...4.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 3-7122

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 13.00...14.00 Firing order : 1-3-5-4-2 Note remarks Test sheet : MAN 10,0 d1 : 14.12.90 Edition Replaces : 0-72-144-216-288 : ISO-4113 Phasing Test oil Combination no. : 0 402 035 029 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS528 EP type number : 0 412 025 022 BASIC SETTING Governor Governor design. : RQ325/1000PA813-20 1st speed rpm: 750 Governer no. : 0 421 801 567 Rack travel in mm : 11.00...11.10 Customer-spec. information Del.quantity cm3/: 21.5...21.7 Customer : MAN 100 s: (21.2...22.0) Engine : D2865LF/LU05 cm3 : 0.5: 198.0 Spread 1st version kW : 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm : 3.8...4.2 Del.quantity cm3/: 1.7...2.3 Test oil inlet temp. °C : 38...42 100 s: (1.4...2.6) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -2 rpm : 600 : 1 688 901 019 Speed assembly Rack travel in mm : 19.20...20.80 Opening FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar Orifice plate 1st version rpm : 750 diameter mm : 0,8 Speed Aneroid pressure h: 1000 : 215.0...217.0 1000 : (212.0...220.0) Del.quantity : 1 680 750 067 Test Lines : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: Speed per values rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 30...32

1st rack travel in: 10.00

rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1110...1140 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 4.0 Testina: Speed rpm Minimum rack trave: 5.50 : 300 Speed rpm Rack travel in mm : 3.90...4.10 Rack travel in mm : 2.00 : 360...400 Speed rom TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 11.00...11.10 2nd speed rpm : 550 Rack travel in m: 11.40...11.66 3rd speed rpm : 825 Rack travel in m: 11.20...11.40 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom hPa : 1000 Pressure : 11.00...11.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.70...8.90 2nd pressure hPa : 100 Rack travel in m: 9.10...9.20 3rd pressure hPa : 350 Rack travel in m: 10.40...10.70 START CUT-OUT 1/min: 245 (265)

Del.quantity cm3/: 215.0...221.0 1000 s: (212.0...224.0) Aneroid pressure h: 1000 Speed rpm : 550 Del.quantity cm3/: 205.0...211.0 1000 s: (202.0...214.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1045...1060 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 3.80...4.20 Del.quantity cm3/ : 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7121 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Speed

Speed

1st version

FUEL DELIVERY CHARACTERISTICS

rpm : 1000

Aneroid pressure h: 1000

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 11,9 g5 : 07.01.91 Edition : 12.9.86 Replaces : ISO-4113 Test oil Combination no. : D 402 036 063 Injection pump : PES6P110A720/3LS477-Pump designation EP type number : 0 412 016 071 Governor Governor design. : RQ250/1100PA817 Governer no. : 0 421 801 359 Customer-spec. information Customer : MAN : D2566F/UH Engine 1st version kW : 177.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 12.6...12.9 100 s: (12.3...13.1) cm3 : 0.4Spread 100 s: (0.7) rpm : 250.0 2nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/ : 1.5...2.0 100 s: (1.2...2.2) cm3 : 0.4 Spread 100 s: (0.7) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 800 Speed 126.0...129.0 Del.quantity : (123.5...131.5) 1000 : 4.00 : (7.50) Spread cm3 1000 RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 20.0 Testina: 1st rack travel in: 10.90 rpm : 1145...1160 Speed

2nd rack travel in: 4.00

Speed

rpm : 1215...1245

Prestroke mm

Test pressure, bar: 30...32

: 3.50...3.60

: (3.45...3.65)

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 6.1

Testing:

rpm : 100 Speed

Minimum rack trave: 7.60 Speed rpm : 250

Rack travel in mm : 5.00...6.20

Rack travel in mm : 2.00

Speed : 320...360 rpm

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed

st speed rpm : 1100 Rack travel in m: 12.40...12.50

2nd speed rpm : 500

Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 130.0...136.0 1000 s: (127.0...139.0)

Speed rpm : 500 Del.quantity cm3/ : 118.0...124.0 1000 s: (115.0...127.0)

RACK STOP ADJUSTMENT

: 600 Speed rom

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...130.0

1000 s: (106.0...134.0)

LOW IDLE

H26

: 250 rpm Speed

Rack travel in mm: 6.00...6.20 Del.quantity cm3/: 15.0...20.0

1000 s: (12.5...22.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7693

APPLICATION

**Omnibus** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 11,9 b1 Edition : 07.01.91 Replaces : 11.12.87 Test oil : ISO-4113 Combination no. : 0 402 036 065 Injection pump Pump designation : PES6P110A720/3LS477-EP type number : 0 412 016 071 Governor Governor design. : RQV300...1100PA831 : D 421 813 574 Governer no. Customer-spec. information Customer : MAN : D2866 F Engine : 177.0 1st version kW : 2200 Rated speed inlet temp. °C : 38...42 : 1 417 413 025 : 0 681 343 009 assembly : 172...175 pressure, bar : 1 680 750 015 : 6.00x1.50x600 Insp. values in parentheses Set equal delivery quant. per values

TEST BENCH REQUIREMENTS Test oil Overflow valve Inlet press., bar: 1.50 Test nozzle holder Opening Test Lines Outside diameter x Wall thickness x Length mm (A) Injection pump setting values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 3.50...3.60 : (3.45...3.65) H27

Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 12.6...12.9 100 s: (12.3...13.1) Spread cm3 : 0.4100 s: (0.7) rpm : 300.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.5...2.0 100 s: (1.2...2.2) cm3 : 0.4 Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 : 1.10...1.30 1st speed travel mm : 450 2nd speed rpm : 3.00...3.40 travel mm rpm : 900 3rd speed : 6.00...6.30 travel mm 4th speed 1100 man : 7.70...7.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1170 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 800 : 126.0...129.0 Del.quantity 1000 : (123.5...131.5) Spread cm3 : 4.00

1000

: (7.50)

RATED SPEED 1st version Control lever position degrees: 115...123 Testina: 1st rack travel in: 10.90 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm Speed Rack travel in mm : 5.90...6.10 CONSTANT REGULATION : 300...395 Speed rpm START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 1100 Speed rpm Del.quantity cm3/: 135.0...141.0 1000 s: (132.0...144.0) Speed rpm : 500 Del.quantity cm3/: 120.0...126.0 1000 s: (117.0...129.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1140...1150

rpm : 300 Speed Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5) cm3 : 4.50 Spread 1000 s: (7.50) Remarks: : MAN-NR, 2-7723

LOW IDLE

Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...130.0 1000 s: (106.0...134.0)

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11,9 g7 : 07.01.91 : 0-60-120-180-240-300 Edition Phasing : 11.12.87 Replaces Tolerance + - ° : 0.50 (0.75) : ISO-4113 Test oil Combination no. : 0 402 036 066 Time to cyl. no. : 6 BASIC SETTING Injection pump Pump designation : PES6P110A720/3LS477-1st speed rpm: 800 EP type number : 0 412 016 071 Rack travel in mm : 11.90...12.00 Governor Governor design. : RQ250/1100PA845 Del.quantity cm3/: 12.6...12.9 Governer no. : 0 421 801 380 100 s: (12.3...13.1) Customer-spec. information Customer : MAN cm3 : 0.4Spread : D2866 F/UH Engine 100 s: (0.7) : 177.0 1st version kW rpm : 250.0 Rated speed : 2200 2nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.5...2.0 TEST BENCH REQUIREMENTS 100 s: (1.2...2.2) cm3 : 0.4 Test oil Spread 100 s: (0.7) inlet temp. °C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 025 Control-lever position Degree: -2 rpm : 600 Inlet press., bar: 1.50 Speed Rack travel in mm : 19.20...20.80 Test nozzle holder : 0 681 343 009 FULL LOAD DELIV. AT FULL LOAD STOP assembly 1st version Openina : 172...175 pressure, bar Speed rpm : 800 : 126.0...129.0 Del.quantity 1000 : (123.5...131.5) : 4.00 : 1 680 750 015 Test lines cm3 Spread 1000 : (7.50) Outside diameter RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed : 600 rpm Rack travel in mm: 20.0 per values \_\_\_\_ BEGINNING OF DELIVERY Testing: 1st rack travel in: 10.90 Test pressure, bar: 30...32 rpm : 1145...1160 Speed : 3.50...3.60 : (7 - 5...3.65)

2nd rack travel in: 4.00

rpm

Speed

: 1230...1260

Prestroke mm

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Speed

Rack travel in mm: 6.1

Testing:

Speed rpm : 100 Minimum rack trave: 7.60 Speed rpm: 250
Rack travel in mm: 6.00...6.20

Rack travel in mm : 2.00 Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 800

Rack travel in m: 12.40...12.50 ad speed rpm : 1100

2nd speed

Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min: 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 135.0...141.0

1000 s: (132.0...144.0)

rpm : 500 Speed

Del.quantity cm3/: 120.0...126.0 1000 s: (117.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

npm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0)

LOW IDLE

: 250 Speed rom

Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7821

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 b2 : 07.01.91 Edition : 11.12.87 Replaces Test oil : ISO-4113

Combination no. : 0 402 036 067

Injection pump

: PES6P110A720/3LS477-Pump designation

EP type number : 0 412 016 071

Governor

Governor design. : RQV300...1100PA846

Governer no. : 0 421 813 593

Customer-spec. information : MAN Customer

Engine : D2866 F

: 177.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 11.90...12.00

Del.guantity cm3/: 12.3...12.6

100 s: (12.0...12.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 1.5...2.0 100 s: (1.2...2.2)

Spread cm3 : 0.4100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm rpm : 450

2nd speed travel mm

: 2.90...3.30 rpm : 900

3rd speed

: 5.80...6.20 travel mm

: 1100 4th speed rpm

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 800 Speed rpm

Del.quantity

: 123.0...126.0 1000 : (120.5...128.5)

: 4.00 Spread cm3

1000 : (7.50) RATED SPEED

1st version

Control lever

position degrees: 114...122

Testina:

1st rack travel in: 10.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 82...90

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

rpm : 300 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 305...460 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1100 Speed

Del.quantity cm3/: 132.0...138.0

1000 s: (129.0...141.0)

rpm : 500 Speed

Del.quantity cm3/: 117.0...123.0 1000 s: (114.0...126.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm: 5.90...6.10 Del.quantity cm3/: 15.0...20.0 1000 s: (12.5...22.5)

cm3 : 4.50 Spread

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7822

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 u1 Test sheet Edition : 07.01.91 : 20.7.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing Tolerance + - ° : 0.50 (0.75) Combination no. : 0 402 036 740 Time to cyl. no. : 6 Injection pump Pump designation : PES6P120A720/3LS3255 : 0 412 026 741 BASIC SETTING EP type number Governor Governor design. : RQ300/1000PA813-13 1st speed rpm: 700 : 0 421 801 529 Governer no. Customer-spec. information Customer : MAN : D2866LF03 Engine 1st version kW : 273.0 Spread cm3 : 0.5Rated speed : 2000 TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.8: 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 550 : 1 688 901 019 Speed assembly Opening : 207...210 pressure, bar Orifice plate 1st version rpm : 700 diameter mm : 0,8 Speed Del.quantity 1000 : 1 680 750 067 Test lines Spread cm3 Outside diameter x Wall thickness : 6.00X1.50X1000 RATED SPEED x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: per values

Rack travel in mm : 15.00...15.10 Del.quantity cm3/: 24.2...24.4 100 s: (23.9...24.7) 100 s: (0.9) rpm : 300.0Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) 100 s: (1.2) Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP Aneroid pressure h: 1200 : 242.0...244.0 : (239.0...247.0) : 5.00 1000 : (9.00) : 550 Speed rpm Rack travel in mm : 20.0 1st rack travel in: 13.80

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

rpm : 1045...1060 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 5.0 Testing: Speed : 300 rpm Minimum rack trave: 6.50 : 300 rpm Rack travel in mm : 4.90...5.10 Rack travel in mm: 2.00 : 360...400 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 14.80...14.90 2nd speed rpm : 700 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed nom hPa : 1200 Pressure : 15.00...15.10 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 13.70...14.10 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200

: 1000

rpm : 700

1000 s: (233.0...245.0)

rpm Del.quantity cm3/: 236.0...242.0

Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0) Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 1045...1060 Speed INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) LOW IDLE rpm : 300 Speed cm3 : 8.00 Spread 1000 s: (12.00) Remarks:

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

: MAN-NR. 0-7050 Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Speed

Speed

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 u5 Test sheet : 14.12.90 Edition Replaces : ISO-4113 Phasing : 0-60-120-180-240-300 Test oil : 0 402 036 743 Tolerance + - ° : 0.50 (0.75) Combination no. Time to cyl. no. : 6 Injection pump Pump designation : PES6P12DA720/3LS3255 : 0 412 026 739 BASIC SETTING EP type number Governor rpm: 700 Governor design. : RQ300/1000PA813-19 1st speed : 0 421 801 561 Governer no. Rack travel in mm : 15.10...15.20 Customer-spec. information Del.quantity cm3/: 24.4...24.6 Customer : MAN : D2866LF05 100 s: (24.1...24.9) Engine 1st version kW : 272.0 Spread cm3 : 0.5Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Rack travel in mm: 4.8...5.2 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve Spread cm3 : 0.8100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 rpm : 550 : 1 688 901 019 assembly Speed Rack travel in mm : 19.20...20.80 **Opening** FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar 1st version Orifice plate Speed rpm : 700 diameter mm : 0,8 Aneroid pressure h: 1200 : 244.0...246.0 Del.quantity 1000 : 1 680 750 067 : (241.0...249.0) Test lines : 5.00 cm3 Spread 1000 : (9.00) Outside diameter x Wall thickness : 6.00x1.50x1000 RATED SPEED x Length mm (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: : 550 per values \_\_\_ Speed rpm Rack travel in mm: 20.0 BEGINNING OF DELIVERY Test pressure, bar: 30...32 Testina:

1st rack travel in: 14.10

LOW IDLE 1 Setting point w/out bumper spring : 300 rom Rack travel in mm: 5.0 Testing: : 200 Speed rpm Minimum rack trave: 6.50 rpm : 300 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 360...400 Speed rpm TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 15.10...15.20 2nd speed rpm : 700 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure : 15.10...15.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 14.00...14.40 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 1000 rpm Del.quantity cm3/: 238.0...244.0 1000 s: (235.0...247.0) Speed rpm : 700 J08

rpm : 1045...1060

rpm : 1160...1190

rpm : 0.00...1.00

Speed

Speed

Speed

2nd rack travel in: 4.00

4th rack travel in: 1300

Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0) Spread cm3 : 10.00 1000 s: (-) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 1045...1060 Speed STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Speed rpm : 300 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread 1000 s: (12.00)

LOW IDLE

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

: MAN-NR. 33-7037

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6-2-4-1-5-3 Note remarks Test sheet : MAN 11,9 u6 Edition : 14.12.90 Replaces : ISO-4113 Test oil : 0-60-120-180-240-300 Phasing Combination no. : 0 402 036 744 : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation : PES6P120A720/3LS3255 Time to cyl. no. : 6 : 0 412 026 739 EP type number BASIC SETTING Governor : RQV300...1000PA876-1 Governor design. rpm: 700 1st speed : 0 421 813 897 Governer no. Rack travel in mm : 15.10...15.20 Customer-spec. information Del.quantity cm3/: 24.4...24.6 Customer : MAN 100 s: (24.1...24.9) : D2866LF05 Engine cm3 : 0.5: 272.0 Spread 1st version kW : 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 4.8...5.2 Test oil Del.quantity cm3/: 1.7...2.3 inlet temp. °C : 38...42 100 s: (1.4...2.6) Overflow valve cm3 : 0.8Spread : 1 417 413 025 100 s: (1.2) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 1045 1st speed 9.70...9.90 travel mm Opening | 300 : 207...210 pressure, bar 2nd speed rpm 0.90...1.30 travel mm : 550 : 3.70...4.30 3rd speed Orifice plate rpm : travel mm diameter mm : 0.8 4th speed rpm : 800 : 6.60...7.00 travel mm : 1 680 750 067 Test lines 5th speed : 1300 rpm : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 rpm : 1075 (A) Injection pump setting values Speed Rack travel in mm : 15.20...17.80 Insp. values in parentheses Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Aneroid pressure h: 1200 : 244.0...246.0 Del quantity 1000 : (241.0...249.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 298...306 Testina: 1st rack travel in: 14.10 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 254...262 Testing: Speed man Minimum rack trave: 6.50 : 300 rom Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 280...400 Speed Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1200 Pressure : 15.10...15.20 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 14.00...14.40

1st version Aneroid pressure h: 1200 : 1000 Speed rpm Del.quantity cm3/: 238.0...244.0 1000 s: (235.0...247.0) : 700 Speed rpm Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0) cm3 : 10.00 Spread 1000 s: (-) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.10 rpm : 1040...1050 beea INTERMEDIATE RATED SPEED Rack travel in mm: 4.00 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) LOW IDLE : 300 Speed rpm Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7039 Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Speed

START CUT-OUT

1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 8,8 m : 14.12.90 Test sheet Edition : 16.2.90 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 046 334

Injection pump

Pump designation : PES6P120A320RS515 : 0 412 026 053 EP type number

Governor

Governor design. : RQV300...1150PA527K Governer no. : 0 421 815 164

Customer-spec. information : RVI Customer

: MIDR 062030B Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 14.6...14.8

100 s: (14.3...15.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 600.0 Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.7)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.70...2.10 travel mm

2nd speed rpm : 900

: 5.80...6.20 travel mm

rpm : 1150 3rd speed

: 7.40...7.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 146.0...148.0 Del.quantity 1000 : (143.0...151.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 115...123

Testing: 1st rack travel in: 9.20 rpm : 1235...1245 Speed 2nd rack travel in: 4.00 rpm : 1305...1335 Speed 4th rack travel in: 1450 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 62...70 Testing: rpm : 200 Speed Minimum rack trave: 6.30 Speed rpm: 300 Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 320...440 Speed TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 10.20...10.30 and speed rpm : 750 Rack travel in m: 9.20...9.40 2nd speed rpm : 500 3rd speed Rack travel in m: 8.60...8.80 4th speed rpm : 350 Rack travel in m: 8.40...8.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 123.0...129.0 1000 s: (120.0...132.0) rpm : 500 Speed Del.quantity cm3/: 66.0...72.0 1000 s: (63.0...75.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20 Speed rpm : 1235...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1.000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.26...5.00
Del.quantity cm3/ : 13.0...19.0
1000 s: (10.0...22.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 9,8 k 1 Edition : 14.12.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 0 402 046 342 Tolerance + - ° : 0.50 (0.75) Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A320RS525-1 EP type number : 0 412 026 059 BASIC SETTING Governor Governor design. : RQV275...1100PA984 1st speed rpm: 1100 : 0 421 813 904 Governer no. Rack travel in mm : 10.60...10.70 Customer-spec. information Del.quantity cm3/: 16.6...16.8 Customer : RVI 100 s: (16.3...17.1) : MIDR 06 20 45 Engine cm3 : 0.5 1st version kW : 202.0 Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 275.0 2nd speed Rack travel in mm : 5.3...5.7 Del.quantity cm3/ : 1.5...2.1 Test oil inlet temp. °C : 38...42 100 s: (1.2...2.4) Overflow valve cm3 : 0.8Spread 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 1145 1st speed : 8.40...8.60 **Opening** travel mm : 207...210 rom : 275 pressure, bar 2nd speed travel nun : 0.80...1.20 rpm : 500 Orifice plate 3rd speed : 3.50...4.10 diameter mm : 0,8 travel mm rpm : 850 4th speed : 5.90...6.30 travel mm rpm : 1450 Test Lines : 1 680 750 067 5th speed : 11.00...12.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00X1.50X1000 Control-lever position Degree: -1 Speed rpm : 1125 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version

Speed

rpm : 1100

Aneroid pressure h: 700

Test pressure, bar: 25...27

Del.quantity : 100.0...171.0) : 5.00 Spread cm31000 : (9.00) RATED SPEED 1st version Control lever position degrees: 298...306 Testina: 1st rack travel in: 9.60 rpm : 1170...1180 Speed 2nd rack travel in: 4.00 Speed rpm : 1245...1275 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 242...250 Testing: Speed COM Minimum rack trave: 7.20 : 300 Speed COM Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rom : 320...440 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 700 Pressure Rack travel mm : 10.60...10.70 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 220 Rack travel in m: 10.00...10.10 3rd pressure hPa : 180 Rack travel in m: 9.30...9.60 START CUT-OUT 1/min: 220 (240) Speed

: 700 Speed rpm Del.quantity cm3/: 156.0...162.0 1000 s: (153.0...165.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 101.0...103.0 1000 s: (98.0...106.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1170...1180 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 125.0...155.0 1000 s: (125.0...155.0) LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.93...5.70
Del.quantity cm3/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

1st version

FUEL DELIVERY CHARACTERISTICS

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 6,2 f 1 Test sheet

: 14.12.90 Edition

Replaces

Test oil : ISO-4113

: 0 402 046 818 Combination no.

Injection pump

Pump designation : PES6P110A320RS3233

: 0 412 016 728 EP type number

Governor

Governor design. : RQV275...1250PA982

: 0 421 813 902 Governer no.

Customer-spec. information

Customer : RVI

Engine : MIDR 06 02 26 T

1st version kW : 184.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.20...4.30 Prestroke mm

: (4.15...4.35)

Rack travel in mm : 18.00...21.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.60...4.80

& maximum rack tra: 21.00

Difference ° CS : 4.50...6.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 10.9...11.1

100 s: (10.6...11.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 4.9...5.3

Del.quantity cm3/: 2.2...2.7

100 s: (1.9...2.9)

cm3 : 0.4Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1325 1st speed

: 8.10...8.30 travel mm

rpm : 300 2nd speed

: 1.10...1.50 travel mm

rom : 500 3rd speed

: 3.10...3.70 travel mm

rpm : 800 4th speed

travel mm : 5.10...5.50

: 1650 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st pressure hPa : -Rack travel in m: 11.60...11.80 rpm : 700 Speed Aneroid pressure h: 1000 2nd pressure hPa : 760 : 109.0...111.0 Rack travel in m: 13.20...13.30 Del.quantity 1000 : (106.5...113.5) 3rd pressure hPa : 600 Rack travel in m: 12.10...12.30 : 4.00 Spread cm3 1000 : (7.50)START CUT-OUT RATED SPEED 1/min: 240 (260) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 296...304 Testing: 1st version 1st rack travel in: 12.70 Aneroid pressure h: 1000 rpm : 1315...1325 rpm : 1250 Speed Speed Del.quantity cm3/: 101.0...105.0 2nd rack travel in: 4.00 1000 s: (98.0...108.0) rpm : 1470...1500 Speed 4th rack travel in: 1550 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 67.0...69.0 1000 s: (64.5...71.5) rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 260...268 **BREAKAWAY** Testina: Speed rpm : 200 1st version Minimum rack trave: 8.10 1mm rack travel less than Speed rpm: 300 Rack travel in mm: 5.00...5.20 full load rack tr: 12.70 rpm : 1315...1325 Speed CONSTANT REGULATION rpm : 280...400 STARTING FUEL DELIVERY Speed TORQUE CONTROL Dimension a mm rpm : 100 : 0.30 Speed Del.quantity cm3/: 80.0...100.0 1000 s: (76.0...104.0) Torque control curve - 1st version t speed rpm : 700 Rack travel in m: 13.70...13.80 1st speed : 1250 LOW IDLE 2nd speed rpm Rack travel in m: 13.20...13.30 : 880 rpm : 300 3rd speed Speed rpm Rack travel in m: 13.50...13.60 Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 22.0...27.0 1000 s: (19.5...29.5) 4th speed rpm : 920 Rack travel in m: 13.30...13.50 cm3 : 4.50 Spread 1000 s: (7.50) Aneroid/Altitude Compensator Test Remarks: 1st version Setting Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 Speed : 500 rpm start of delivery hPa : 1000 Pressure : 13.70...13.80 Rack travel mm Measurement 1/min: 500 Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: RVI 12.0 j : 14.12.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 046 819 Combination no.

Injection pump

: PES6P120A320RS3269 Pump designation

: 0 412 026 743 EP type number

Governor

Governor design. : RQV275...1000PA983

: 0 421 813 903 Governer no.

Customer-spec. information Customer : RVI

: MIDR 06 35 40 L Engine

: 283.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

: 0,8 of ameter mm

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 4.9...5.3

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1070 : 7.70...7.90 1st speed travel mm

: 275 2nd speed rpm

travel mm : 0.70...1.10

: 500 3rd speed rpm

: 3.50...4.10 travel mm

4th speed 750 rpm

5.30...5.70 1450 travel mm

5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity : 249.0...254.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 296...304 Testing: 1st rack travel in: 12.00 rpm : 1065...1075 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 247...255 Testing: Speed rpm : 200 Minimum rack trave: 6.80 rom : 275 Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 310...420 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1000 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 440 Rack travel in m: 12.10...12.30 3rd pressure hPa : 200 Rack travel in m: 10.10...10.40 START CUT-OUT 1/min: 195 (215) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 243.0...249.0 1000 s: (240.0...252.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 1065...1075 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) LOW IDLE Speed rpm : 275 Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

Aneroid pressure h: 1000

rpm : 1000

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 j : 14.12.90 Edition : 17.5.90 Replaces

: ISO-4113 Test oil

: 0 402 076 738 Combination no.

Injection pump

Pump designation : PES6P110A720RS3251

: 0 412 016 733 EP type number

Governor

: RSV400...1050P0A513-Governor design.

: 0 421 833 327 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6619AF03 Engine

: 212.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 200...215

Test nozzle holder

: 1 688 901 103 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,7 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 19.6...19.8

100 s: (19.4...20.0)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.2...3.7

100 s: (3.0...3.9)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

Del.quantity : 190.3....200.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina:

1st rack travel in: 11.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1170 3rd rack travel in: 4.00

Speed rpm: 1155...1185 4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1

Control lever

position degrees: 19...27 Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 4.9

Testina:

Speed rom : 100 Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 12.70...12.80

2nd speed rpm : 600

Rack travel in m: 13.70...13.80

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom hPa : 900 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 475

Rack travel in m: 12.70...12.80 3rd pressure hPa : 225 Rack travel in m: 10.80...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rom : 600 Del.quantity cm3/: 236.5...240.5 1000 s: (234.5...242.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...210.0

1000 s: (175.0...215.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.30...5.50

Del.guantity cm3/: 32.0...37.0

1000 s: (30.0...39.0) cm3 : 6.00

Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE42224

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : DEE 10,1 g2 : 07.01.91 Replaces : ISO-4113 Test oil : 0 402 076 739 Combination no. Injection pump Pump designation : PES6P110A720RS3217 EP type number : 0 412 016 724 Governor Governor design. : RSV400...1050P2A549 : 0 421 833 350 Governer no. Customer-spec. information : JOHN DEERE Customer : 6101 HRW01 Engine : 230.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening : 207...210 pressure, bar Orifice plate : 0,6 diameter mm : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00x3.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

Prestroke mm : 3.35...3.45 : (3.30...3.50) Rack travel in mm: 10.50 Firing order : 1-5-3-6-2-4Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 20.5...20.7 100 s: (20.3...20.9) Spread cm3 : 0.4100 s: (0.6) rpm : 400.02nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.0...2.4 100 s: (1.7...2.6) cm3 : 0.6Spread 100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 1200 Del.quantity : 205.5...207.5 1000 : (203.5...209.5) Spread cm3 : 4.00 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 38...46

Testing:

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 11.80 rpm : 1095...1105 Speed 2nd rack travel in: 4.00 rpm : 1165...1175 Speed 3rd rack travel in: 4.00 : 1165...1195 Speed rom 4th rack travel in: 1300 Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring : 400 mon Rack travel in mm:5.3

Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.80...12.90 and speed rom : 700 Rack travel in m: 13.70...13.90 2nd speed

Aneroid/Altitude Compensator Test

1st version Settina pm : 500 hPa : 1200 Speed rom Pressure

Rack travel mm : 13.70...13.90

Measurement 1/min: 500 Speed

1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 385 Rack travel in m: 11.80...11.90

3rd pressure hPa : 640

Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 : 700 Speed rpm Del.quantity cm3/: 212.5...216.5 1000 s: (210.5...218.5)

Aneroid pressure h: -: 500 Speed והכרו

Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full Load rack tr: 11.80 Speed rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 165.0...185.0 1000 s: (160.0...190.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 20.0...24.0 1000 s: (17.5...26.5)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47354 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark or blockage = 8.5° cam rotation angle after start of delivery for cylinder 1.

: 3.55...3.65 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.50...3.70) Rack travel in mm : 10.50 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : DEE 7,7 c 1 Edition : 07.01.91 Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil Tolerance  $+ - \circ : 0.50 (0.75)$ Combination no. : 0 402 076 740 Injection pump Time to cyl. no. : 1 Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728 BASIC SETTING Governor Governor design. : RSV425...1050P2A548 rpm : 10501st speed : 0 421 833 351 Governer no. Rack travel in mm: 11.80...11.90 Customer—spec. information : JOHN DEERE Del.quantity cm3/: 15.1...15.3 Customer 100 s: (14.9...15.5) Engine : 6076 HRW01 : 185.0 Spread cm3 : 0.41st version kW : 2100 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 425.0 2nd speed Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.6...2.0 Test oil inlet temp. °C : 38...42 100 s: (1.3...2.2) cm3 : 0.6Overflow valve Spread : 1 457 413 010 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 rpm : 800 : 1 688 901 101 assembly Speed Rack travel in mm : 0.30...0.70 Openina Governor spring pre-tension pressure, bar : 207...210 Click setting x : 5.00 Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 015 Speed rpm : 1050 Aneroid pressure h: 1200 : 151.0...153.0 Outside diameter Del.quantity 1000 : (149.0...155.0) x Wall thickness x Length mm : 6.00X3.00X600 Spread cm3 : 4.00 1000 : (6.50) (A) Injection pump setting values Insp. values in parentheses RATED SPEED Set equal delivery quant.

1st version

Testing:

Control lever

position degrees: 41...49

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 10.80 rpm : 1110...1120 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1170 3rd rack travel in: 4.00 speed rpm : 1160...1190 4th rack travel in: 1250 Sneed rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring Speed rpm : 425 Rack travel in mm : 4.4 Testina: : 100 Speed וחמיי Minimum rack trave: 19.00 : 425 rom . Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 11.80...11.90 rpm : 600 2nd speed Rack travel in m: 13.00...13.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure : 13.00...13.20 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.90...12.10 2nd pressure hPa : 740 Rack travel in m: 12.30...12.40 3rd pressure hPa : 815 Rack travel in m: 12.70...13.10 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 1110...1120

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm3/: 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47353 \* = Bank A = cyl. 1-3-6-8

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

1st version

Speed

Speed

Aneroid pressure h: 1200

rpm

Aneroid pressure h: -

rpm : 600

Del.quantity cm3/: 187.0...191.0 1000 s: (185.0...193.0)

: 800

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 11,1 b : 26.03.90 Edition Replaces : 2.10.89 Test oil : ISO-4113 : 0 402 646 836 Combination no. Injection pump Pump designation : PE6P12DA72ORS7726 : 0 412 626 815 EP type number Governor Governor design. : 0 421 813 552 Governer no. Customer-spec. information : SAAB SCANIA Customer : DSC 11 - 18 Engine : 265.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 015 Outside diameter

: RQV200...1000PA725-1 x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 14.10...14.20 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) cm3 : 0.6Spread 100 s: (0.9) rpm : 225.0 2nd speed Rack travel in mm: 4.5...4.9 Del.quantity cm3/ : 1.5...1.9 100 s: (-) Spread cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 225 1st speed : 1.20...1.60 travel mm 2nd speed rom : 350 2.40...3.00 travel mm 3rd speed rpm : 650 : 4.40...5.00 travel mm rpm : 1045 4th speed : 8.40...8.60 travel mm rpm : 1160 5th speed : 9.90...10.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1040 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700

Aneroid pressure h: 900

: 234.0...236.0 1000 : (231.0...239.0) Del.quantity : 6.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testina: 1st rack travel in: 13.10 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 61...69 Testing: Speed rpm : 100 Minimum rack trave: 6.10 rpm : 225 Rack travel in mm : 4.50...4.70 Rack travel in mm: 2.00 rpm : 340...400 Speed Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 14.10...14.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 510
Rack travel in m: 13.00...13.10
3rd pressure hPa : 250

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 223.0...231.0 1000 s: (221.0...233.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 275.0...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 225 Speed rpm

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

ADDITIONAL INFORMATION

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DAF 11,7 j Test sheet : 07.01.91 Edition : 6.4.90 Replaces : ISO-4113 Test oil Combination no. : 0 402 646 893 Injection pump Pump designation : PE6P120A320RS7202 EP type number : D 412 626 835 Governor Governor design. : RQ250/1000PA936 : 0 421 801 507 Governer no. Customer-spec. information : DAF Customer : WS 268 Engine : 268.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 850 1st speed Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 20.8...31.0 100 s: (20.5...21.3) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 2.1...2.7 100 s: (1.8...3.0) cm3 : 0.8 100 s: (1.2) Spread GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 550 Speed Rack travel in mm : 15.20...16.40 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 850 Aneroid pressure h: 1000 : 208.5...210.5 Del.quantity 1000 : (205.5...213.5) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Setting point: Speed rpm : 550 Rack travel in mm : 15.8 : 550

Testing:

1st rack travel in: 10.90

rpm : 1035...1050 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1250

Speed rom : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 5.1

Testina:

Speed : 100 rom Minimum rack trave: 6.60 rpm : 250

Rack travel in mm: 5.00...5.20
Rack travel in mm: 2.00
Speed rpm: 310...350

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.10...12.20

2nd speed rpm : 1000

Rack travel in m: 12.00...12.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

: 11.90...12.00 Rack travel mm

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 360 Rack travel in m: 11.10...11.20 3rd pressure hPa : 220

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 145.5...147.5

1000 s: (142.5...150.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1035...1050 Speed

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 21.0...27.0 1000 s: (18.0...30.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DAF 11,7 L : 14.12.90 Test sheet Edition : 16.11.90 Replaces : ISO-4113 Test oil Combination no. : 0 402 646 912 Injection pump Pump designation : PE6P120A320RS7218 : 0 412 626 839 EP type number Governor Governor design. : RQ250/1000PA936-1 : 0 421 801 508 Governer no. Customer-spec. information Customer : DAF Engine : WS 268 : 268.0 1st version kW Rated speed : 2000 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter

x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm : (5.25...5.45)
Rack travel in mm : 14.50...15.50
Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - \* : 0.50 (0.75) Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference \* CS : 2.25...3.75 BASIC SETTING rpm: 850 1st speed Rack travel in mm : 15.00...15.10 Del.guantity cm3/: 23.5...23.7 100 s: (23.2...24.0) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 6.6...7.0 Del.quantity cm3/: 3.1...3.7 100 s: (2.8...4.0) cm3 : 0.8Spread 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 550 Rack travel in mm : 15.80...17.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 850 Aneroid pressure h: 1000 : 235.0...237.0 1000 : (232.0...240.0) cm3 : 5.00 Del.quantity Spread 1000 : (9.00) RATED SPEED

1st version

Setting point:

: 550 Speed rpm Rack travel in mm: 16.4

Testina:

1st rack travel in: 14.00

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...2.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 5.0

Testing:

Speed : 100 LDW Minimum rack trave: 7.00

rpm : 250

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

rpm : 310...350 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Settina

: 600 Speed rpm

hPa : 1000 Pressure Rack travel mm : 15.00...15.10

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30 3rd pressure hPa : 330 Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 99.0...109.0 1000 s: (95.0...113.0)

Aneroid pressure h: -

rpm : 600

Del.quantity cm3/: 165.0...167.0

1000 s: (162.0...170.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1035...1050 Speed

LOW IDLE

: 250 Speed rom

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

K02

: 5.30...5.40 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (5.25...5.45) Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4 Note remarks : DAF 11,7 L1 : 14.12.90 Test sheet Edition : 23.11.90 Replaces : 0-60-120-180-240-300 : ISO-4113 Phasing Test oil : 0.50 (0.75) Combination no. : 0 402 646 913 Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS7218 BEGINNING OF DELIVERY DIFFERENCE EP type number : 0 412 626 839 Governor betw. rack trav. m: 4.90...5.10 Governor design.: RQV250...1000PA939 & maximum rack tra: 14.5...15.5 Governer no. : 0 421 813 829 Difference ° CS : 2.25...3.75 Customer-spec. information BASIC SETTING : DAF Customer rpm: 850 : WS 268 1st speed Engine Rack travel in mm : 15.00...15.10 1st version kW : 268.0 Rated speed : 2000 Del.quantity cm3/: 23.5...23.7 TEST BENCH REQUIREMENTS 100 s: (23.2...24.0) Test oil inlet temp. °C cm3 : 0.5: 38...42 Spread 100 s: (0.9) Overflow valve : 1 417 413 025 rpm : 250.0 2nd speed Rack travel in mm : 6.6...7.0 Del.quantity cm3/: 3.1...3.7 100 s: (2.8...4.0) Inlet press., bar: 1.50 Test nozzle holder cm3 : 0.8: 1 688 901 105 Spread assembly 100 s: (1.2) **Opening** : 207...210 (B) Setting of injection pump pressure, bar with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,8 1st speed rpm : 1045 : 7.80...8.00 travel mm Test lines : 1 680 750 015 rpm : 250 2nd speed : 0.70...1.10 travel mm Outside diameter 3rd speed rpm : 400 : 2.50...3.10 rpm : 700 x Wall thickness travel mm x Length mm : 6.00X1.50X600 4th speed : 4.50...4.90 rpm : 1350 travel mm (A) Injection pump setting values 5th speed : 11.00...12.00 Insp. values in parentheses travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 BEGINNING OF DELIVERY

Rack travel in mm : 15.20...17.80

Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 118...126

Testing:

1st rack travel in: 14.00

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

: 1160...1190 Speed rpm

4th rack travel in: 1250

Speed rom : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 78...86

Testina:

Speed rpm Minimum rack trave: 7.00 rpm : 250

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

: 270...380 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel mm : 15,00...15,10

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30 3rd pressure hPa : 330

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 99.0...109.0 1000 s: (95.0...113.0)

cm3 : 10.00

1000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/: 165.0...167.0 1000 s: (162.0...170.0)

**BREAKAWAY** 

Spread

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1040...1050 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MB 9,6 q : 14.12.90 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump

Pump designation : PE6P120A320LS7836 : 0 412 626 840 EP type number

Governor

Governor design. : RQ300/1050PA972 : 0 421 801 542 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 200.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.C0X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

-360

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.30...12.50

Del.guantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.5...5.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 700

Del.quantity : 174.0...176.0

1000 : (171.0...179.0) : 5.00

Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.10 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1300 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.6 Testing: Speed rom : 200 Minimum rack trave: 7.50 : 300 Speed rom Rack travel in mm : 5.50...5.80 Rack travel in mm : 2.00 : 380...420 Speed rom Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 12.30...12.50 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 400 Rack travel in m: 11.40...11.60 3rd pressure hPa : 900 Rack travel in m: 12.40...12.60 \* 4th pressure hPa : 1100 Rack travel in m: 12.80...13.00 5th pressure hPa : -Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/: 196.0...199.0 1000 s: (193.0...202.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1600 Speed : 800 man Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 125.0...127.0 1000 s: (122.0...130.0) Spread cm3 : 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

**K06** 

Note remarks

: MB 9,6 o 2 : 14.12.90 Test sheet Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 402 646 922

Injection pump

Pump designation : PE6P12OA32OLS7834

EP type number : 0 412 626 841

Governor

Governor design: RQ300/1050PA972-2

Governer no. : 0 421 801 556

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M401 LA

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

-360

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.00...13.20

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.5...5.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

: 199.0...201.0 Del.quantity

1000 : (196.0...204.0) cm3 : 5.00 1000 : (9.00)

Spread

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 12.60 Speed rpm: 1090...1105 2nd rack travel in: 4.00 : 1165...1195 Speed rpm 4th rack travel in: 1300 Speed rom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.6 Testing: Speed rpm Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm: 5.50...5.80
Rack travel in mm: 2.00
Speed rpm: 380...420 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 800 Pressure Rack travel mm : 13.00...13.20 Measurement  $1/\min:600$ Speed 1st pressure hPa : 250 Rack travel in m: 9.40...9.60 2nd pressure hPa : 550 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1050 Rack travel in m: 13.10...13.30 \* 4th pressure hPa : -Rack travel in m: 9.90...10.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 1050 Speed Del.quantity cm3/: 207.0...210.0 1000 s: (204.0...213.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 118.0...120.0
1000 s: (115.0...123.0)
Spread cm3 : 8.00
1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.60 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

•

**K08** 

Note remarks

: MB 9,6 p : 07.01.91 Test sheet Edition : 5.11.90 Replaces Test oil : ISO-4113

: 0 402 646 924 Combination no.

Injection pump

Pump designation : PE6P120A320LS7837 : 0 412 626 842 EP type number

Governor

Governor design: RQ300/950PA971-3 : 0 421 801 557 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M401 LA

: 250.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.guantity cm3/: 22.7...22.9

100 s: (22.4...23.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.9...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Dearee: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 227.0...229.0 Del.quantity 1000 : (224.0...232.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

Speed Rack travel in mm : 20.0 Testing:
1st rack travel in: 14.00
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50
LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.0

Testing:
Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 5.90

Rack travel in mm : 5.90...6.20 Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.40
2nd speed rpm : 950

Rack travel in m: 15.00...15.20

3rd speed rpm : 800

Rack travel in m: 15.70...15.90

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 600 Pressure hPa : 1000

Rack travel mm : 14.30...14.50

Measurement

Speed 1/min: 600

1st pressure hPa : 400

Rack travel in m: 11.30...11.50

2nd pressure hPa : 640

Rack travel in m: 13.40...13.60

3rd pressure hPa : 1240

Rack travel in m: 14.40...14.60 \*

4th pressure hPa : 1360

Rack travel in m: 15.00...15.20

5th pressure hPa : -

Rack travel in m: 8.80...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1700 Speed rpm : 950 Del.quantity cm3/: 252.0...255.0 1000 s: (249.0...258.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1700 Speed rpm : 800

Del.quantity cm3/: 263.0...267.0 1000 s: (260.0...270.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -Speed rpm : 500

Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

Spread cm3 : 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 14.00 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 o 1 : 20.12.90 Test sheet Edition : 30.11.90 Replaces Test oil : ISO-4113

: 0 402 646 926 Combination no.

Injection pump

Pump designation : PE6P120A320LS7834 : 0 412 626 841 EP type number

Governor

Governor design. : RQV300...950PA797-19

Governer no. : 0 421 813 901

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

1st version kW : 230.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

(5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 21.9...22.1

100 s: (21.6...22.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

2nd speed rpm : 617

: 5.00...5.50 travel mm rpm : 780 3rd speed

travel mm : 6.10...6.60

: 1009 4th speed man

: 8.30...8.80 travel mm

: 1092 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 550 Rack travel in m: 13.90...14.10 1st version rpm : 600 Speed 3rd pressure hPa : 1350 Aneroid pressure h: 900 Del.quantity : 219.0...221.0 Rack travel in m: 14.80...15.10 \* 1000 : (216.0...224.0) 4th pressure hPa : -: 5.00 Rack travel in m: 9.80...10.10 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 240 (260) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 118...126 1st version Testing: Aneroid pressure h: 1600 1st rack travel in: 13.90 rpm : 990...1000 : 950 Speed rpm Del.quantity cm3/: 234.0...236.0 2nd rack travel in: 4.00 1000 s: (231.0...239.0) Speed rpm : 1075...1105 4th rack travel in: 1200 cm3 : 8.00 Spread rpm : 0.00...1.00 1000 s: (12.0) Speed Aneroid pressure h: 1600 LOW IDLE 1 Speed rpm : 800 Del.quantity cm3/: 241.0...244.0 1000 s: (238.0...247.0) Control lever position degrees: 82...90 Rack travel in mm: 6.6 cm3 : 8.00 Spread 1000 s: (12.0) Testing: Aneroid pressure h: -: 200 : 500 Speed Speed rpm rpm Del.quantity cm3/: 125.0...127.0 1000 s: (122.0...130.0) Minimum rack trave: 8.50 rpm cm3 : 8.00 Rack travel in mm : 6.50...6.80 Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...500 Speed BREAKAWAY TORQUE CONTROL : 0.40 Dimension a mm 1st version : 950 1mm rack travel less than 2nd speed rpm Rack travel in m: 14.90...15.10 full load rack tr: 13.90 : 875 3rd speed הסח Rack travel in m: 15.10...15.30 : 990...1000 Speed rpm 4th speed rpm : 800 Rack travel in m: 15.30...15.50 STARTING FUEL DELIVERY Aneroid/Altitude : 100 Compensator Test Speed rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) 1st version Setting Remarks: : 600 Speed rom hPa : 900 Pressure : 14.70...14.90 Rack travel mm \* Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 11.50...11.70

Note remarks

: MB 11,1 b 1 : 07.01.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 931

Injection pump

Fump designation : PE6P120A320LS7837

: 0 412 626 842 EP type number

Governor

: RQV300...1050PA797-Governor design.

: 0 421 813 911 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.guantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 2.00...2.30 travel mm

2nd speed rpm : 600

travel mm : 5.90...6.10

: 950 3rd speed rpm : 1050 4th speed rom : 1100 5th speed rpm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1080 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed

Aneroid pressure h: 800 : 211.0...213.0 Del.quantity 1000 : (208.0...216.0) cm3 : 5.00 1st version Spread Aneroid pressure h: 1500 1000 : (9.00) : 1050 Speed rom Del.quantity cm3/: 242.0...245.0 1000 s: (239.0...248.0) RATED SPEED cm3 : 8.00Spread 1000 s: (12.0) 1st version Aneroid pressure h: 1500 Control lever : 800 position degrees: 118...126 Speed rpm Del.quantity cm3/: 244.0...248.0 1000 s: (241.0...251.0) Testina: cm3 : 8.00 1st rack travel in: 14.00 Spread rpm : 1090...1105 1000 s: (12.0) Speed 2nd rack travel in: 4.00 Aneroid pressure h: rpm : 500 rpm : 1165...1195 Speed Speed Del.quantity cm3/: 135.0...137.0 4th rack travel in: 1200 1000 s: (132.0...140.0) rpm : 0.00...1.00 Speed cm3 : 8.00Spread 1000 s: (12.0) LOW IDLE 1 Control lever position degrees: 82...90 **BREAKAWAY** Testing: Speed 1st version man. Minimum rack trave: 7.70 1mm rack travel less than : 300 Speed rom Rack travel in mm : 5.70...6.00 full load rack tr: 14.00 rpm : 1090...1105 Speed CONSTANT REGULATION rpm : 300...550 STARTING FUEL DELIVERY Speed Aneroid/Altitude Speed : 100 Compensator Test rpm Remarks: 1st version Setting : 600 Speed man hPa : 800 Pressure : 13.60...13.80 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 500
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1000
Rack travel in m: 13.90...14.10
4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

K14

Note remarks

: MB 14,7 a 1 : 14.12.90 Test sheet Edition : 31.8.90 Replaces Test oil : ISO-4113

: 0 402 648 812 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA717 Governer no. : 0 421 801 258

Customer-spec. information

Customer : MERCDEDES-BENZ

: 0M442 LA Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm: 6.1...6.7 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.5

Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 680

: 222.0...224.0 Del.quantity 1000 : (219.0...227.0)

cm3 : 4.00 1000 : (7.00) Spread

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 14.40 Speed rom : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 6.4 Testina: Speed : 200 Speed rpm Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.10...6.70 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL : 0.90 Dimension a mm 2nd speed rom : 1050 Rack travel in m: 15.20...15.40 3rd speed rpm : 850 Rack travel in m: 15.80...16.10 Speed Aneroid/Altitude Compensator Test Speed 1st version Settina Speed : 600 COM hPa : 680 Remarks: Pressure : 14.70...14.90 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 310 Rack travel in m: 12.10...12.30 2nd pressure hPa : 470 Rack travel in m: 13.70...13.90 3rd pressure hPa : 820 Rack travel in m: 14.90...15.00 4th pressure hPa : 950 Rack travel in m: 15.60...15.90 5th pressure hPa : -Rack travel in m: 11.40...11.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1150 : 1050 rpm Del.quantity cm3/: 225.0...229.0 1000 s: (222.0...232.0) cm3 : 7.00Spread 1000 s: (10.0) Aneroid pressure h: 1150 Speed rpm : 850 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 7.00Spread 1000 s: (10.0) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) Spread cm3 : 7.001000 s: (10.0) BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 14.40

rpm : 1095...1110

STARTING FUEL DELIVERY

: 100 rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Note remarks

: MB 14,7 a23 Test sheet : 14.12.90 Edition : 14.9.90 Replaces

Test oil : ISO-4113

: 0 402 648 892 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

: 0 412 628 818 EP type number

Governor

Governor design. : RQV350...950PA866-7

: 0 421 813 882 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

: 266.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm : 5.5...6.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 350 1st speed

: 1.30...1.80 travel mm

2nd speed rpm : 424

: 2.30...2.80 travel mm

rpm : 700 3rd speed

: 4.10...4.60 travel mm

rpm : 1008 4th speed

travel mm : 7.90...8.40

: 1220 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1025 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 375 Rack travel in m: 13.40...13.60 1st version 3rd pressure hPa : 900 Speed rpm : 600 Rack travel in m: 14.10...14.20 \* 4th pressure hPa : -Aneroid pressure h: 650 Del.quantity : 200.0...202.0 1000 : (197.0...205.0) Rack travel in m: 11.70...11.90 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT 1/min: 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 117...125 1st version Aneroid pressure h: 1100 Testing: 1st rack travel in: 12.20 : 950 Speed rpm Del.quantity cm3/: 190.0...193.0 rpm : 990...1000 Speed 1000 s: (187.0...196.0) 2nd rack travel in: 4.00 rpm : 1075...1105 cm3 : 8.00 Speed Spread 1000 s: (12.0) 4th rack travel in: 1150 Aneroid pressure h: 1100 rpm : 0.00...1.50 Speed : 750 Speed rpm Del.quantity cm3/: 213.0...217.0 LOW IDLE 1 1000 s: (210.0...220.0) Control lever cm3 : 8.00 position degrees: 66...74 Spread 1000 s: (12.0) Aneroid pressure h: 1100 Testina: 950 Speed : 100 Speed rpm rpm Del.quantity cm3/: 163.0...165.0 Minimum rack trave: 7.40 1000 s: (160.0...168.0) : 350 rpm Rack travel in mm : 5.50...6.10 Spread cm3 : 8.001000 s: (12.0) CONSTANT REGULATION Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 147.0...149.0 rpm : 350...550 Speed 1000 s: (144.0...152.0) TORQUE CONTROL cm3 : 8.00 Dimension a mm : 0.90 Spread 1000 s: (12.0) : 950 2nd speed rpm Rack travel in m: 13.20...13.40 3rd speed rpm : 900 Rack travel in m: 13.50...13.60 **BREAKAWAY** 4th speed rpm : 800 Rack travel in m: 14,30...14.50 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 12.20 rpm : 990...1000 Speed 1st version STARTING FUEL DELIVERY Setting : 600 Speed rpm Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 Pressure hPa : 650 Rack travel mm : 14.00...14.20 1000 s: (196.0...224.0) Measurement Speed 1/min: 600 Remarks: 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 \* Increase in control-rod travel with

K18

Note remarks

Test sheet : MB 14,7 u Edition : 07.01.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 900

Injection pump

Pump designation : PE8P12OA320LS7840 EP type number : 0 412 628 850

Governor

Governor design: RQ300/1050PA972-4

: 0 421 801 560 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 208.0...210.0 Del.quantity

1000 : (205.0...213.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testing: 1st rack travel in: 11.90 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.5 Testina: : 200 Speed rpm Minimum rack trave: 7.90 : 300 Speed rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 nom : 380...420 Speed TORQUE CONTROL Dimension a mm : 0.65 : 1050 2nd speed nom Rack travel in m: 12.90...13.10 3rd speed rpm : 800 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed **CDM** hPa : 900 Pressure : 13.50...13.70 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 440 Rack travel in m: 11.30...11.50 2nd pressure hPa : 550 Rack travel in m: 12.30...12.50 3rd pressure hPa : 1050 Rack travel in m: 13.60...13.70 \* 4th pressure hPa : 1120 Rack travel in m: 13.90...14.10 5th pressure hPa : -Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Arreroid pressure h: 1400

rpm : 1050

Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Del.quantity cm3/ : 236.0...240.0 1000 s: (233.0...243.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than

imm rack travel less than

full load rack tr: 11.90 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

•

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Note remarks

: MB 14,7 u 1 Test sheet : 20.12.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 648 901 Combination no.

Injection pump

: PE8P120A320LS7840 Pump designation EP type number : 0 412 628 850

Governor

: RQV300...1050PA797-Governor design.

: 0 421 813 894 Governer no.

Customer-spec. information

: MERCEDES-BEN7 Customer

: 0M442 A Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.50...13.70

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.3...1.9 100 s: (1.0...2.2)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

travel mm : 1.10...1.60

2nd speed rpm : 470

: 3.00...3.50 travel mm

3rd speed rpm : 830

travel mm : 5.90...6.40

: 1110 4th speed rpm

: 8.20...8.70 travel mm

: 1183 rpm 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1125 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP 1st version : 600 Speed rpm Aneroid pressure h: 800 : 208.0...210.0 Del.quantity 1000 : (205.0...213.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 npm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 82...90 Testina: Speed rpm Minimum rack trave: 7.70 : 300 Speed שכנה Rack travel in mm : 6.00...6.40 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 600 hPa : 800 Pressure : 13.50...13.70 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.30...10.50 2nd pressure hPa : 550 Rack travel in m: 12.30...12.50 3rd pressure hPa : 1050 Rack travel in m: 13.60...13.70 \* 4th pressure hPa : 1150 Rack travel in m: 14.00...14.30

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1050 Speed Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1400 : 800 Speed rpm Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version : 1090...1100 Speed rpm STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

START CUT-OUT

1/min: 220 (240)

Note remarks

Test sheet : RVI 6,2 i
Edition : 28.11.90
Replaces : 29.9.90
Test oil : ISO-4113

Combination no. : 0 402 746 894

Injection pump

Pump designation : PES6P110A320RS7208

EP type number : 0 412 716 803

Governor

Governor design. : RQV275...1175PA942-1

K

Governer no. : 0 421 815 244

Customer—spec. information Customer : RVI

Engine : MIDRO60226 M

1st version kW : 210.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.10...4.20\_

: (4.05...4.25)

Rack travel in mm : 13.00...14.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 14.00...14.10 & maximum rack tra: 20.0...21.0 Difference ° CS : 2.75...4.25

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 17.1...17.3

100 s: (16.8...17.5)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 4.8...5.2 Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

travel mm : 9.70...9.90

2nd speed rpm : 275

travel mm : 0.90...1.10

3rd speed rpm: 600

travel mm : 4.20...4.60

4th speed rpm : 1000

travel mm : 7.10...7.50 5th speed rpm : 1600

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1370

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 10.10...10.50 1st version 2nd pressure hPa : 520 Rack travel in m: 12.30...12.40 rpm : 1175 Speed Aneroid pressure h: 1000 3rd pressure hPa : 240 : 171.0...173.0 1000 : (168.5...175.5) Rack travel in m: 10.90...11.30 Del.quantity : 4.00 START CUT-OUT Spread cm3 1000 : (7.50) 1/min: 215 (235) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever 1st version position degrees: 110...118 Aneroid pressure h: 1000 : 700 Testing: Speed rom Del.quantity cm3/: 147.0...153.0 1st rack travel in: 13.00 1000 s: (144.0...156.0) Speed rpm : 1245...1255 2nd rack travel in: 4.00 Aneroid pressure h: -Speed rpm : 1420...1450 4th rack travel in: 1600 : 700 Speed rom Del.quantity cm3/: 50.0...60.0 1000 s: (47.0...63.0) Spread cm3 : 8.00 rom : 0.00...1.00Speed 1000 s: (-) LOW IDLE 1 Aneroid pressure h: -Control Lever Speed rpm: 500
Del.quantity cm3/: 69.0...71.0
1000 s: (66.5...73.5) position degrees: 56...64 Testina: Speed : 200 man Minimum rack trave: 5.70 **BREAKAWAY** rom Rack travel in mm : 4.90...5.10 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 350...480 Speed full load rack tr: 13.00 rpm : 1245...1255 TORQUE CONTROL Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY rpm : 1175 1st speed Rack travel in m: 14.00...14.10 2nd speed rpm : 700 : 100 Speed rpm Rack travel in m: 13.20...13.40 d speed rpm : 400 Del.quantity cm3/: 85.0...115.0 1000 s: (81.0...119.0) 3rd speed Rack travel in m: 12.40...12.80 LOW IDLE Aneroid/Altitude Compensator Test : 275 Speed rpm Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5) 1st version cm3 : 4.50Setting Spread 1000 s: (7.50) : 1175 Speed **Com** Pressure hPa : 1000 Rack travel : 14.00...14.10 Remarks: mm Measurement Setting and blocking of pointer of 1/min: 1175 Speed start-of-delivery sensor on cyl. 1 1st pressure hPa : start of delivery

K25

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 4,0 A 30 : 14.12.90 Test sheet Edition : 02.10.89 Replaces Test oil : ISO-4113 Combination no. : 0 403 444 116 Injection pump Pump designation : PES4MW100/720RS1127 : 0 413 404 103 EP type number Governor : RQV300...1400MW48-7 Governor design. : 0 420 083 172 Governer no. Customer-spec. information : MB-NFZ Customer : OM 364A Engine 1st version kW : 70.0 Rated speed : 2800 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder assembly : D 681 343 009 Openina : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Firing order : 1-3-4-2 : 0-90-180-270 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1400 1st speed Rack travel in mm : 10.00...10.10 Del.quantity cm3/: 6.7...6.9 100 s: (6.5...7.1) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1550 1st speed : 9.00...9.40 travel mm rpm : 1450 2nd speed : 8.20...8.40 travel mm 3rd speed rpm : 550 : 2.80...3.40 travel mm : 300 4th speed rpm : 1.00...1.40 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1450 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1400 Speed : 67.0...69.0 Del.quantity 1000 : (65.0...71.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED

1st version

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80

: (3.65...3.85)

Control lever position degrees: 116...124 Testing: 1st rack travel in: 9.50 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 rpm : 1540...1570 Speed 4th rack travel in: 1650 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 84...92 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 8.0 Testing: rpm : 100 Speed Minimum rack trave: 9.50 rpm : 300 Rack travel in mm : 7.90...8.10 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.00...10.10 ad speed rpm : 750 2nd speed Rack travel in m: 10.80...10.90 rpm : 950 3rd speed Rack travel in m: 10.60...10.90 rpm : 1100 4th speed Rack travel in m: 10.20...10.50 START CUT-OUT Speed 1/min : 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 60.0...62.0 1000 s: (57.0...65.0) cm3 : 5.00 Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1450...1460 Speed

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

:

Remarks:

STARTING FUEL DELIVERY

Note remarks

: MB 4,0 A 29 Test sheet : 14.12.90 Edition : 02.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 403 444 117

Injection pump

Pump designation : PES4MW100/720RS1127

: 0 413 404 103 EP type number

Governor

Governor design. : RQV300...1400MW48-10

: 0 420 083 178 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 364A Engine

: 85.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

est lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 11.50...11.60

Del.guantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

: 9.00...9.40 travel mm rpm : 1450 2nd speed

travel mm : 8.30...8.50

rpm : 550 3rd speed

: 2.80...3.40 travel mm

4th speed : 300 rom

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1400

: 79.0...81.0 Del.quantity 1000 : (77.0...83.0)

: 3.50

cm3

: (6.00) 1000

RATED SPEED

Spread

1st version

L01

Control lever position degrees: 116...124 Setting point: : 1450 Speed rom : 1440...1450 Speed rpm 2nd rack travel in: 4.00 rpm : 1540...1570 Speed 4th rack travel in: 1650 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 84...92 Setting point w/out bumper spring rpm Rack travel in mm: 9.0 Testina: rpm : 100 Speed Minimum rack trave: 10.50 : 300 Speed rpm Rack travel in mm : 8.90...9.10 TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 11.50...11.60 rpm : 750 2nd speed Rack travel in m: 12.80...12.90 3rd speed rpm : 950 Rack travel in m: 12.40...12.60 4th speed rpm : 1100 Rack travel in m: 12.00...12.30 START CUT-OUT 1/min: 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 75.0...77.0 1000 s: (73.0...79.0) cm3 : 5.00Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than

full load rack tr: 10.50 Speed rpm : 1440...1450 Speed STARTING FUEL DELIVERY L02

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 8.90...9.10 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Note remarks

Test sheet : MB 6,0 D 71 : 14.12.90 Edition Replaces : 16.11.90 : ISO-4113 Test oil

Combination no. : 0 403 446 226

Injection pump

Pump designation : PES6WW100/720RS1131-

: 0 413 406 165 EP type number

Governor

Governor design. : RQ300/1300MW105 : 0 420 082 039 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366LA Engine

: 177.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - \*

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

cm3 : 0.3Spread

100 s: (0.6)

2rid speed rpm : 300.0Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 9.40...9.80 travel mm rpm : 1360

2nd speed

: 7.20...7.40 travel mm : 550

3rd speed rpm : 4.20...4.80 travel mm

: 300 4th speed rpm

: 1.30...1.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 1200 Speed

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 120.0...122.0 Del.quantity

1000 : (118.0...124.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 101...109 Setting point: : 1200 Speed rom Rack travel in mm: 15.5 Testing: 1st rack travel in: 13.60 Speed rpm : 1345...1360 2nd rack travel in: 4.00 Speed rpm : 1450...1480 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.4 Testing: : 100 Speed rpm Minimum rack trave: 9.00 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -: 10.60...10.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure has: 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 500 Rack travel in in: 13.50...13.70 3rd pressure hPa : 1000 Rack travel in m: 14.60...14.70 START CUT-OUT 1/min : 180 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

rpm : 750

Speed

1.04

Del.quantity cm3/: 111.0...115.0 1000 s: (109.0...117.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.60 rpm : 1345...1360 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1600 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Note remarks

: MB 6,0 D 89 Test sheet : 30.11.90 Edition : 16.08.90 Replaces Test oil : ISO-4113

: 0 403 446 257 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RQV300...1300MW50-7

: 0 420 083 221 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366A Engine

: 125.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rom: 1300 1st speed

Rack travel in mm : 11.00...11.10

Del.guantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.50...8.70 travel mm

rpm : 1450 2nd speed

: 9.50...9.90 travel mm

rpm : 500 3rd speed

: 2.70...3.30 travel mm

rpm : 300 4th speed

travel mm : 1.20...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 900

: 77.0...79.0 Del.quantity

1000 : (75.0...81.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

Control lever position degrees: 110...118 Speed Testing: 1st rack travel in: 10.00 rpm : 1340...1350 Speed Spread 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00Speed LOW IDLE 1 Control lever Speed position degrees: 80...88 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.9 Speed rpm : 300 Rack travel in mm : 7.80...8.00 BREAKAWAY 1st version CONSTANT REGULATION rpm : 330...500 Speed Speed TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.00...11.10 rpm : 800 2nd speed Speed Rack travel in m: 11.80...12.00 3rd speed rpm : 585 Rack travel in m: 12.30...12.40 LOW IDLE Aneroid/Altitude Compensator Test 1st version Setting : 500 Spread Speed rom hPa Pressure : 8.90...9.00 Rack travel mm Remarks: Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.00...10.10 2nd pressure hPa : 460 Rack travel in m: 11.20...11.50 3rd pressure hPa : 900 Rack travel in m: 12.30...12.40 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 900 : 800 rpm Del.quantity cm3/: 75.5...78.5 1000 s: (73.0...81.0) cm3 : 5.001000 s: (7.0) Aneroid pressure h: 900 : 585 rpm Del.quantity cm3/: 68.5...71.5 1000 s: (66.0...74.0) Aneroid pressure h: -: 500 rpm Del.quantity cm3/: 20.0...22.0 1000 s: (18.0...24.0) 1mm rack travel less than full load rack tr: 10.00 rpm : 1340...1350 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 19.00...21.00 Speed rpm : 300 Rack travel in mm : 7.80...8.00 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 1000 s: (5.50)

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 0 65 : 14.12.90 Test sheet Edition : 16.11.90 Replaces fest oil : ISO-4113 : 0 403 446 259 Combination no. Injection pump : PES6MW100/720RS1131-Pump designation EP type number : 0 413 406 165 Governor Governor design. : RQV300...1300MW68-2 : 0 420 083 224 Governer no. Customer-spec. information Customer : MB-NFZ : 0M366LA Engine 1st version kW : 177.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 : 1 680 750 015 Test Lines Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° BASIC SETTING rpm: 1300 1st speed Rack travel in mm : 14.40...14.50 Del.guantity cm3/: 11.4...11.6 100 s: (11.2...11.8) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack trave in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5)(B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1450 1st speed : 9.40...9.80 travel mm rpm : 1350 2nd speed travel mm : 8.40...8.60 3rd speed rpm : 600 travel mm : 3.90...4.50 : 300 4th speed rpm : 0.80...1.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 1000 : 114.0...116.0 Del.quantity 1000 : (112.0...118.0) : 3.50 cm3 Spread

: (6.00)

1000

RATED SPEED

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 3.60...3.70

: (3.55...3.75)

1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 13.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1480...1510 Speed 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 78...86 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.4 Testing: : 100 Speed rpm Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : -Pressure : 10.20...10.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.50...11.70 2nd pressure hPa : 400 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1000 Rack travel in m: 14.40...14.50 START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 750 Speed rom Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0) Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50) Remarks:

L08

Note remarks

: RVI 6,2 G 1 Test sheet : 14.12.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 269

Injection pump

Pump designation : PES6MW100/320RS1154

: 0 413 406 144 EP type number

Governor

Governor design. : RQV275...1250MW113-1

Governer no. : 0 420 083 233

Customer-spec. information Customer : RVI

: MIDR 060226 P Engine

1st version kW : 124.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 16.50...19.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.00

& maximum rack tra: 18.00 Difference ° CS : 2.24...2.26

BASIC SETTING

rom: 1250 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 275.0 2nd speed

Rack travel in mm : 6.30...6.50 Del.guantity cm3/: 2.5...2.9

100 s: (2.2...3.1)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1475 1st speed

9.20...9.60 travel mm

: 1300 2nd speed rpm

travel mm

7.80...8.00

: 500 3rd speed rpm

: 3.00...3.60 travel mm

4th speed : 275 rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1360 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1000

: 91.0...93.0 Del.quantity 1000 : (89.0...95.0) Cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 11.20 rpm : 1320...1340 Speed 2nd rack travel in: 4.00 rpm : 1460...1500 Speed 4th rack travel in: 1600 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 80...88 Setting point w/out bumper spring : 275 Speed L DUB Rack travel in mm: 5.8 Testing: Speed riom: Minimum rack trave: 7.80 rpm : 275 Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom Pressure hPa : 1000 Rack travel mm : 12.20...12.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 135 Rack trave' in m: 11.30..11.40 3rd pressure hPa : 180 Rack travel in m: 11.60...11.90 START CUT-OUT 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000 rpm : 750 Speed Del.quantity cm3/: 81.5...84.5 1000 s: (79.0...87.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 50.0...52.0 1000 s: (48.0...54.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.20

rpm : 1320...1340 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 88.0...102.0

1000 s: (85.0...105.0) Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 25.0...29.0 1000 s: (22.5...31.5)

cm3 : 3.50

Spread 1000 s: (5.00)

Remarks:

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L10

Note remarks

Test sheet : MB 6.1 D Edition : 14.12.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 446 273

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-13

Governer no. : 0 420 083 236

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.8...9.D

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5

Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6) Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80 2nd speed rpm : 1350

travel mm : 8.40...8.60

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rrm: 300

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Deeed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 112...120 1st version Aneroid pressure h: 700 : 750 Testina: Speed rpm Del.quantity cm3/: 86.0...89.0 1st rack travel in: 9.90 rpm : 1340...1350 Speed 1000 s: (83.5...91.5) 2nd rack travel in: 4.00 Spread cm3 : 5.00rpm : 1440...1470 Speed 1000 s: (7.0) 4th rack travel in: 1550 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 78...86 Setting point w/out bumper spring **BREAKAWAY** : 300 rom 1st version Rack travel in mm: 6.4 1mm rack travel less than Testing: speed rpm : 200 Minimum rack trave: 7.80 full load rack tr: 9.90 rpm : 1340...1350 Speed : 300 COM Rack travel in mm : 6.30...6.50 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.70 : 100 Speed rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.90...11.00 2nd speed rpm : 750 LOW IDLE Rack travel in m: 11.60...11.70 3rd speed rpm : 1100 Speed : 300 rom Rack travel in m: 11.10...11.30 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Aneroid/Altitude cm3 : 3.50 Spread Compensator Test 1000 s: (5.50) 1st version Remarks: Settina rpm : 500 hPa : 290 : 500 Speed Pressure : 10.20...10.30 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : -Rack travel in m: 9.60...9.70 2nd pressure hPa : 400 Rack travel in m: 11.00...11.30 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70 START CUT-OUT Speed 1/min: 200 (230) FUEL DELIVERY CHARACTERISTICS

L12

Note remarks

: MB 6,1 E : 20.12.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 403 446 275 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1120

: 0 413 406 112 EP type number

Governor

Governor design. : RQV300...1300MW50-12

: 0 420 083 237 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M366LA

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.7...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1450 1st speed : 9.40...10.00 travel mm

: 1350 2nd speed rpm

travel mm : 8.50...8.70

3rd speed rpm : 450

: 2.40...3.00 travel mm

: 300 4th speed rpm : 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 1000

Del.quantity : (106.0...112.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 111...119 Testing: 1st rack travel in: 12.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1460...1490 Speed 4th rack travel in: 1530 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 76...84 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.40...6.60 CONSTANT REGULATION rpm : 320...550 Speed Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed mon hPa : -Pressure : 10.50...10.60 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 450 Rack travel in m: 11.10...11.30 2nd pressure hPa : 600 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.90...14.00 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Speed Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0) Spread cm3: 5.00
1000 s: (7.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 36.0..38.0
1000 s: (34.0..40.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm: 1340...1350

STARTING FUEL DELIVERY

Speed rpm: 100
Del.quantity cm3/: 90.0...100.0
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

L14

Note remarks

: MAN 7,3 A Test sheet : 14.12.90 Edition : 05.10.90 Replaces : ISO-4113 Test oil

: 0 403 456 112 Combination no.

Injection pump

Pump designation : PES6MW100/321RS1190

: 0 413 406 176 EP type number

Governor

Governor design. : RQ250/1100MW84-5 : 0 420 082 046 Governer no.

Customer-spec, information : MAN Customer

: D 0826 LOH05 Engine

1st version kW : 150.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.25...3.35 Prestroke mm : (3.20...3.40)

Rack travel in mm : 15.00...0.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 14.70...14.80

Del.quantity cm3/: 13.2...13.4

100 s: (13.0...13.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed : 9.30...9.70 travel mm

: 1100 2nd speed rpm : 7.30...7.50 : 470 travel mm

3rd speed rpm

travel mm : 6.70...7.30

rpm : 250 4th speed

: 1.40...1.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 89

rpm : 600 Speed

Rack travel in mm : 16.00...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1000

: 132.0...134.0 Del.quantity 1000 : (130.0...136.0) cm3 : 3.50 1000 : (6.00)

Spread

RATED SPEED 1st version Control Lever position degrees: 96...104 Setting point: Speed : 600 rom Rack travel in mm: 16.9 Testing: 1st rack travel in: 13.70 rpm : 1145...1160 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1250 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring : 250 rpm Rack travel in mm: 5.5 Testina: rpm : 100 Speed Minimum rack trave: 7.00 rpm : 250 Speed Rack travel in mm : 5.40...5.60 Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 500 hPa : 250 Pressure Rack travel mm : 12.60...12.70 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 12.00...12.10 2nd pressure hPa : 450 Rack travel in m: 13.70...14.00 3rd pressure hPa : 1000 Rack travel in m: 14.70...14.90 START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS

Speed rpm : 600 Del.quantity cm3/: 131.0...134.0 1000 s: (128.5...136.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1000 Speed rpm: 800 Del.quantity cm3/: 131.5...134.5 1000 s: (129.0...137.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.70 rpm : 1145...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0) LOW IDLE Speed rpm Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 19.0...23.0 1000 s: (16.5...25.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: : MAN #3-7115 Start-of-delivery mark is at start of delivery of cylinder 1

1st version

Aneroid pressure h: 1000

Note remarks

: MAN 7,3 C Test sheet Edition : 14.12.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 456 113

Injection pump

Pump designation : PES6MW100/321RS1210

EP type number : 0 413 406 201

Governor

Governor design. : RQ250/1050MW84-6 Governer no. : 0 420 082 049

Customer-spec. information

Customer : MAN

: D 0826 LUH 250 Engine

: 184.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 15.9...16.1

100 s: (15.7...16.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.3...1.7

100 s: (1.0...1.9) cm3 : 0.3 Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1125 1st speed : 7.30...7.70 travel mm : 1050

2nd speed rpm : 6.10...6.30 travel mm

: 400 3rd speed rpm travel mm : 5.70...6.30

: 250 4th speed rpm

: 2.50...2.90 travel nm

GUIDE SLEEVE POSITION

Control-lever position Degree: 98

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1000

Del.quantity : 139.0...163.0)

cm3 Spread : 3.50 1000 : (6,00)

L17

RATED SPEED 1st version Control Lever position degrees: 95...103 Setting point: : 600 Speed rpm Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.00 rpm : 1075...1090 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1250 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring : 250 Speed rpm Rack travel in mm: 6.0 Testina: : 100 Speed COM Minimum rack trave: 7.50 rpm Rack travel in mm : 5.90...6.10 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.00...14.10 2nd speed : 600 rpm Rack travel in m: 14.00...14.10 : 800 3rd speed rpm Rack travel in m: 14.00...14.10 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 190 Pressure Rack travel mm : 10.30..10.40 Measurement

1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.90...10.00 2nd pressure hPa : 870 Rack travel in m: 13.20...13.50 3rd pressure hPa : 1000 Rack travel in m: 14.00...14.10

START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600 Del.quantity cm3/: 162.0...165.0 1000 s: (159.5...167.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: 1000 : 800 Speed rpm Del.quantity cm3/: 161.0...164.0 1000 s: (158.5...166.5) Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 Speed rpm : 1075...1090 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity\_cm3/: 80.0...100.0 1000 s: (77.0...103.0) LOW IDLE rpm : 250 Speed Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: MAN #3-7127

Start-of-delivery mark is at start of delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 D 31 : 10.01.91 Test sheet Edition : 05.02.88 Replaces Test oil : ISO-4113 : 0 403 476 054 Combination no. Injection pump Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138 Governor : RSV350...1200MW1A316 Governor design. : 0 420 085 076 Governer no. Customer-spec. information : DAIMLER-BENZ Customer : 0M366A Engine : 115.0 1st version kW : 2400 Rated speed : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - \* BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 11.80...11.90 Del.quantity cm3/: 8.3...8.5 100 s: (8.1...8.7) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 1.0...1.2 100 s: (0.7...1.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Governor spring pre-tension Click setting x : 3.0 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 : 83.0...85.0 Del.quantity 1000 : (81.0...87.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version

Control lever

position degrees: 63...71

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing: 1st rack travel in: 10.80 rpm : 1240...1245 \* Speed 2nd rack travel in: 4.00 rpm : 1285...1298 Speed 3rd rack travel in: 4.00 rpm : 1335...1365 Speed 4th rack travel in: 1450 rpm : 0.30...1.70 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 7.30 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.00...7.60 Rack travel in mm : 2.00 rpm : 515...585 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.80...11.90 . rpm : 750 2nd speed Rack travel in m: 12.30...12.40 3rd speed rpm : 1000 Rack travel in m: 11.90...12.10 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 81.0...83.0 1000 s: (79.0...85.0) cm3 : 5.00Spread 1000 s: (7.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1240...1245 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 80.0...90.0

1000 s: (77.0...93.0) Rack travel in mm: 19.00...21.00 Speed rpm: 350
Rack travel in mm: 7.00...7.60
Del.quantity cm3/: 10.00...12.00
1000 s: (7.0...15.0)
Spread cm3: 3.50
1000 s: (5.00)

Remarks:

Test specifications approved by Scania on 1990-01-15

L20

LOW IDLE

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,0 D 77 : 20.12.90 Test sheet Edition : 16.08.90 Replaces : ISO-4113 Test oil Combination no. : 0 403 476 087 Injection pump Pump designation : PES6MW100/720RS1144 EP type number : 0 413 406 138 Governor Governor design. : RSV350...1200MW0A341 : 0 420 085 145 Governer no. Customer-spec. information Customer : MB-NFZ : 0M366A Engine 1st version kW : 100.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 : 1 680 750 015 Test lines Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ BEGINNING OF DELIVERY

: 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 10.20...10.30 Del.quantity cm3/: 6.9...7.1 100 s: (6.7...7.3) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.50FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed : 69.0...71.0 Del.quantity 1000 : (67.0...73.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 98...106 Setting point: Speed rpm Rack travel in mm : 0.6 Testing: 1st rack travel in: 9.20

rpm : 1240...1245 \*

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80

: (3.65...3.85)

2nd rack travel in: 4.00 rpm : 1280...1293 Speed 3rd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1450 rpm : 0.30...1.70

Speed 5th rack travel in: 1240...1255 rpm : 9.20Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.3

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 350 rpm

Rack travel in mm : 7.00...7.60

Rack travel in mm : 2.00

rpm : 440...500 Speed

TORQUE CONTROL

: 0.90 Dimension a mm

Torque control curve - 1st version

: 1200 1st speed rpm

Rack travel in m: 10.20...10.30

rpm : 800 2nd speed

Rack travel in m: 11.10...11.20

: 900 3rd speed rpm

Rack travel in m: 11.00...11.20

4th speed rpm : 1050

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 69.0...71.0

1000 s: (67.0...73.0)

cm3 : 5.00Spread

1000 s: (7.0)

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0

1000 s: (6.5...15.5)

Spread cm3 : 3.501000 s: (5.00)

Remarks:

Check pneumatic shutoff device at 3.0 bar air pressure

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

L22

Note remarks

: MB 6,0 D 92 : 20.12.90 : 16.08.90 Test sheet Edition Replaces

Test oil : ISO-4113

: 0 403 476 088 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RSV350...1300MW0A341

: D 420 085 146 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : OMB66A

: 125.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.70...10.80

Del.guantity cm3/: 7.2...7.4

100 s: (7.0...7.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 7.0...7.6 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 72.0...74.0 Del.quantity 1000 : (70.0...76.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

: 800 Speed r Diff Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.70

rpm : 1340...1345 \* Speed

2nd rack travel in: 4.00

rpm : 1380...1393 Speed

3rd rack travel in: 4.00

rpm : 1400...1430 Speed

4th rack travel in: 1500

Speed rpm : 0.30...1.70 5th rack travel in: 1345...1360

rpm : 9.70 Speed

LOW IDLE 1

Testing:

Speed L DUL Minimum rack trave: 19.00 Rack travel in mm: 2.00 Speed rpm : 445...505

TORQUE CONTROL

Dimension a mm : 1.30

Torque control curve - 1st version

1st speed

st speed rpm : 1300 Rack travel in m: 10.70...10.80

rpm : 700 2nd speed

Rack travel in m: 11.90...12.00

rpm : 825 3rd speed

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rom

Del.quantity cm3/: 69.0...71.0

1000 s: (67.0...73.0)

cm3 : 5.00 Spread

1000 s: (7.0)

: 825 Speed rom

Del.quantity cm3/: 73.0...76.0 1000 s: (70.5...78.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.70

rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

L24

Note remarks

: MB 6,0 D 94 : 20.12.90 Test sheet Edition Replaces : 16.08.90

Test oil : ISO-4113

: 0 403 476 090 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

: RSV350...1200Mw1A341 Governor design.

: 0 420 085 148 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366A Engine

: 92.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickr. 25

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 12001st speed

Rack travel in mm : 9.80...9.90

Del.guantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

: 62.0...64.0 Del.quantity 1000 : (60.0...66.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 98...103

Setting point:

: 800 rpm Speed Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

rpm : 1235...1240 \* Speed 2nd rack travel in: 4.00 : 1270...1283 Speed rpm 3rd rack travel in: 4.00 rpm : 1300...1330 Speed

4th rack travel in: 1450 rpm : 0.30...1.70 Speed 5th rack travel in: 1245...1260

rpm : 8.80 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 350 Rack travel in mm: 7.3

Testing:

Speed : 100 rom Minimum rack trave: 19.00 Speed rpm: 350 Rack travel in mm: 7.00...7.60 Rack travel in mm: 2.00

Speed rom : 415...475

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

rpm : 1200 1st speed

Rack travel in m: 9.80...9.90

rpm : 800 2nd speed

Rack travel in m: 10.50...10.60

3rd speed rpm : 950

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 60.5...63.5 1000 s: (58.0...66.0) Spread cm3: 5.00

1000 s: (7.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 7.80

rpm : 1235...1240 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

L26

Speed rpm : 350 Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0

1000 s: (6.5...15.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 35...43 min-1 to this speed. The control-rod travel under 2. must be

attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: MB 6,0 D 95 : 20.12.90 Test sheet Edition : 16.08.90 Replaces Test oil : ISO-4113

Combination no. : 0 403 476 091

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1300MW0A342

: 0 420 085 149 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 366 LA Engine

: 150.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

0pening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 6.2...6.9 Del.quantity cm3/: 0.9...1.3100 s: (0.6...1.5)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300Aneroid pressure h: 1000

: 100.0...102.0 Del.quantity 1000 : (98.0...104.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control Lever

position degrees: 90...98

Setting point:

: 800 Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.60

rom : 1340...1345 \* Speed 2nd rack travel in: 4.00 rpm : 1387...1400 Speed 3rd rack travel in: 4.00 Speed : 1420...1450 mom 4th rack travel in: 1600 Speed rpm : 0.30...1.70 5th rack travel in: 1345...1355 rom : 11.60 Speed LOW IDLE 1 Setting point w/out bumper spring : 350 Speed ripm Rack travel in mm: 6.5 Testing: Speed : 100 morn. Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 6.20...6.90 Rack travel in mm : 2.00 : 420...480 Speed rpm Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed mar hPa : 250 Pressure : 11.30...11.40 Rack travel mm Measurement 1/min: 500 Speed ist pressure hPa : -Rack travel in m: 10.70...10.80 2nd pressure hPa : 400 Rack travel in m: 12.10...12.40 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 600 Speed rpm Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 53.0...55.0 1000 s: (51.0...57.0)

1st version 1mm rack travel less than full load rack tr: 10.60

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

rpm : 1340...1345

LOW IDLE

Speed

Remarks:

Test hydr. Locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

\* Read off speed set under 1. Add 47...60 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

Test sheet : MB 6,0 H 3 : 17.09.90 : 31.08.90 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 403 476 093

Injection pump

Pump designation : PES6MW100/720RS1191

EP type number : 0 413 406 179

Governor

Governor design. : RSV350...1300MW0A329

: 0 420 085 151 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 366 LA Engine

: 155.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length m

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50,...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1280 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1280 Speed Aneroid pressure h: 1000

: 98.0...100.0 Del.quantity

1000 : (96.0...102.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 105...113

Setting point:

: 800 Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.00 rpm : 1330...1340 Sneed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1550 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 5.30...5.50 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : Pressure Rack travel mm : 9.00...9.10 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.60...10.70 2nd pressure hPa : 380 Rack travel in m: 11.20...11.50 3rd pressure hPa : 1000 Rack travel in m: 12.00...12.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 600 Speed Del.quantity cm3/: 85.0...88.0 1000 s: (82.5...90.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -: 500 Speed Lbu Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0)

1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1330...1340 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.00) Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Note remarks

: PEN 6,1 Q : 14.12.90 : 23.11.90 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 403 476 094

Injection pump

Pump designation : PES6MW100/320RS1132

EP type number : 0 413 406 124

Governor

Governor design. : RSV300...1050MW4A308

: 0 420 085 155 Governer no.

Customer-spec. information : PENTA Customer

: TD 61 ACE Engine

: 120.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.90...3.00 Prestroke mm

: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 9.2...9.4

100 s: (9.0...9.6)

cm3 : 0.3Spread |

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 92.0...94.0 1000 : (90.0...96.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Setting point:

rpm : 800 Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.10

rpm : 1070...1080 Speed 2nd rack travel in: 4.00 : 1120...1150 Speed rpm 4th rack travel in: 1250 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 76...84 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm : 5.6 Testing: : 100 Speed rom Minimum rack trave: 19.00 rpm : 300 Rack travel in mm : 5.50...5.70 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1070...1380 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 6.00...6.20 Del.quantity cm3/ : 12.0...16.0 1000 s: (9.5...18.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: :

Note remarks

: MAN 7,2 0 : 05.11.90 : 07.04.89 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 403 476 095

Injection pump

: PES6MW100/320RS1200-Pump designation

: 0 413 406 198 EP type number

Governor

Governor design. : RSV300...1100MW0A343

: 0 420 085 154 Governer no.

Customer-spec. information : MAN Customer

Engine : D0826LE 52

: 154.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 13.0...13.2

100 s: (12.8...13.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1000

: 130.0...132.0 Del.quantity 1000 : (128.0...134.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Setting point:

Speed rom Rack travel in mm: 0.6

Testing:

Del.quantity cm3/: 142.0...145.0 1st rack travel in: 12.00 rpm : 1150...1160 1000 s: (139.5...147.5) Speed 2nd rack travel in: 4.00 cm3 : 5.00Spread rpm : 1200...1230 1000 s: (7.0) Speed 4th rack travel in: 1350 Aneroid pressure h: 1000 rpm : 0.30...1.70 rpm : 600 Speed Speed Del.quantity cm3/: 139.0...142.0 1000 s: (136.5...144.5) LOW IDLE 1 Aneroid pressure h: -Control lever rpm : 500 position degrees: 64...?2 Speed Del.quantity cm3/: 68.0...70.0 1000 s: (66.0...72.0) Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.1 **BREAKAWAY** Testing: rpm : 100 Speed Minimum rack trave: 19.00 1st version rpm : 300 1mm rack travel less than Speed Rack travel in mm : 5.00...5.20 full load rack tr: 12.00 rpm : 1150...1160 SET IDLE AUXILIARY SPRING Speed Rack travel in mm: 2.00 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.80 Torque control curve - 1st version Speed : 100 man Del.quantity cm3/: 120.0...130.0 1st speed rpm : 1100 Rack travel in m: 13.00...13.10 1000 s: (117.0...133.0) 2nd speed rpm : 800 Rack travel in m: 13.70...13.80 LOW IDLE rpm : 600 3rd speed Rack travel in m: 13.80...13.90 Speed rpm : 300 Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 9.0...13.0 Aneroid/Altitude 1000 s: (6.5...15.5) Compensator Test cm3 : 3.50 Spread 1000 s: (5.50) 1st version Remarks: Setting : 500 : MAN #3-7064 Speed rpm Setting and blocking of pointer of Pressure hPa : -Rack travel mm : 10.40...10.50 start-of-delivery sensor on cyl. 1 start of delivery Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.70...10.80 2nd pressure hPa : 600 Rack travel in m: 12.80...13.10 3rd pressure hPa : 1000 Rack travel in m: 13.80...13.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 800

Note remarks

Test sheet : PEN 6,1 P 4

Edition : 30.11.90

Replaces : ISO-4113 Test oil

Combination no. : 0 403 476 096

Injection pump

Pump designation : PES6MW100/320RS1132

: 0 413 406 124 EP type number

Governor

: RSV650...750MW4A311-Governor design.

: 0 420 085 161 Governer no.

Customer-spec. information : PENTA Customer

: TD 61 AG Engine

: 93.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.90...3.00 Prestroke mm

: (2.85...3.05)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 650.02nd speed Rack travel in mm : 6.3...6.4 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 96.0...98.0 Del.quantity 1000 : (94.0...100.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 33...41

Setting point:

rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 10.80

rpm : 748...753 Speed

2nd rack travel in: 4.00 rpm : 773...788 Speed

4th rack travel in: 950 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 27...35 Setting point w/out bumper spring rpm : 650

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 650

Rack travel in mm : 5.8

Rack travel in mm : 5.80...5.90

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 748...753

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 140.0...160.0 1000 s: (137.0...163.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm : 6.30...6.40 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: MB 6,1 B Edition : 16.11.90 Replaces

: ISO-4113 Test oil

: 0 403 476 097 Combination no.

Injection pump

: PES6MW100/720RS1131-Pumo designation

: 0 413 406 165 EP type number

Governor

: RSV350...1300Mw0A342 Governor design.

: 0 420 085 157 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M 366 LA Engine

: 177.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 15.60...15.70

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 7.0...7.5 Del.quantity cm3/: 1.0...1.2 100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 120.0...122.0 Del.quantity 1000 : (118.0...124.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testina:

1st rack travel in: 14.60

rpm : 1340...1345 \* Speed 2nd rack travel in: 4.00 rpm : 1390...1403 Speed 3rd rack travel in: 4.00 rpm : 1460...1490 Speed 4th rack travel in: 1600 rpm : 0.30...1.70Speed 5th rack travel in: 1340...1350 rpm : 14.60 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 7.2 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 350 rom Rack travel in mm : 7.00...7.50 Rack travel in mm : 2.00 rpm : 480...540 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 270 Pressure : 12.60...12.70 Rack travel mm Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.70...10.80 2nd pressure hPa : 500
Rack travel in m: 14.30...14.60
3rd pressure hPa : 1000 Rack travel in m: 15.60...15.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 600 COM Del.quantity cm3/: 109.0...111.0 1000 s: (106.5...114.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 31.0...33.0 1000 s: (29.0...35.0)

1st version 1mm rack travel less than

full load rack tr: 13.60 rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.00...7.50 Del.quantity cm3/: 10.0...12.0 1000 s: (6.5...15.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 50...63 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

**BREAKAWAY** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : MB 6,1 C Test sheet : 16.11.90 : 0-60-120-180-240-300 Phasing Edition Replaces Test oil Tolerance + - ° : 0.50 (0.75) : ISO-4113 Combination no. : 0 403 476 098 BASIC SETTING Injection pump rpm: 1060 1st speed Pump designation : PES6MW100/720RS1130 Rack travel in mm : 11.20...11.30 : 0 413 406 122 EP type number Governor : RSV350...1075MW0A318 Del.quantity cm3/ : 7.4...7.6 Governor design. : 0 420 085 158 100 s: (7.2...7.8) Governer no. Customer-spec. information Spread cm3 : 0.3Customer : MB-NFZ 100 s: (0.6) : OM 366 A Engine rpm : 350.0 2nd speed Rack travel in mm: 7.4...7.6 : 111.0 1st version kW Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cm3: 0.3 : 2150 Rated speed TEST BENCH REQUIREMENTS 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 417 413 047 Speed rpm : 800 Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Click setting x : 4.00 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP **Openina** 1st version pressure, bar : 172...175 rpm : 1060 Speed Del.quantity : 74.0...76.0 1000 : (72.0...78.0) Test lines : 1 680 750 015 : 3.50 Spread cm3 Outside diameter 1000 : (6.00) x Wall thickness x Length mm : 6.00x1.50x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever position degrees: 102...110 Set equal delivery quant. per values Setting point: : 800 Speed BEGINNING OF DELIVERY rom Rack travel in mm: 0.6 Test pressure, bar: 30...32

Testing:

1st rack travel in: 10.20

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

rpm : 1100...1110 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 7.5 Testina: rpm : 100 Speed Minimum rack trave: 19.00 : 350 rpm Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 rpm : 400...460 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1060 1st speed Rack travel in m: 11.20...11.30 2nd speed rpm : 600 Rack travel in m: 12.00...12.10 3rd speed rpm : 900 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 61.5...64.5 1000 s: (59.0...67.0) cm3 : 5.00 Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1100...1110 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm3/: 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

CON INT

Prestroke mm : 3.20...3.30 BOSCH INJ. PUMP TEST SPECIFICATIONS : (3.15...3.35) Rack travel in mm : 14.00...16.00 Note remarks : 1-5-3-6-2-4 Firing order : MAN 5,6 Q Test sheet : 23.11.90 Edition Replaces : ISO-4113 : 0-60-120-180-240-300 Phasing Test oil : D 403 476 099 Tolerance + - ° : 0.50 (0.75) Combination no. BASIC SETTING Injection pump Pump designation : PES6MW100/320RS1209 rpm: 700 : 0 413 406 200 1st speed EP type number Governor Rack travel in mm : 14.50...14.60 Governor design. : RSV300...750MW1A802 : 0 420 085 113 Governer no. Del.quantity cm3/: 14.3...14.5 Customer-spec, information 100 s: (14.1...14.7) Customer : MAN cm3 : 0.3: D0826LE20 Spread Engine 100 s: (0.6) 1st version kW : 116.0 : 1500 Rated speed rpm : 300.0 2nd speed Rack travel in mm: 6.6...7.4 TEST BENCH REQUIREMENTS Del.quantity cm3/: 3.4...3.8 100 s: (3.1...4.0) cm3 : 0.6 Test oil inlet temp. °C : 38...42 Spread 100 s: (0.9) Overflow valve : 1 417 413 047 GUIDE SLEEVE POSITION Control-lever position Degree: -3 Inlet press., bar: 1.50 rpm : 800 Rack travel in mm: 0.30...1.00 Test nozzle holder : 1 681 901 101 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina : 207...210 1st version pressure, bar : 700 Speed rpm : 143.0...145.0 Del.quantity Orifice plate 1000 : (141.0...147.0) diameter mm : 0,6 : 3.50 Spread cm3 1000 : (6.00) : 1 680 750 008 Test lines RATED SPEED Outside diameter 1st version x Wall thickness : 6.00X2.00X600 Control lever x Length mm position degrees: 34...42 (A) Injection pump setting values Insp. values in parentheses Setting point: Set equal delivery quant. Speed rpm Rack travel in mm : 0.6 per values Testing: BEGINNING OF DELIVERY

1st rack travel in: 10.80

Speed

rpm : 750...755 \*

Test pressure, bar: 30...32

2nd rack travel in: 4.00 Speed rpm : 777...790 4th rack travel in: 950 rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 14...22

Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.0

Testing:

: 100 Speed rpm : 300 Speed rpm

Rack travel in mm : 6.60...7.40 Rack travel in mm : 2.00

rpm : 310...370 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.80 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...130.0 1000 s: (107.0...133.0)

HIGH IDLE

1st version

Speed rpm Rack travel in mm: 4.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.60...7.40 Del.quantity cm3/: 34.0...38.0 1000 s: (31.5...40.5)

cm3 : 6.00 Spread

1000 s: (9.00)

Remarks:

: MAN #3-7111

Start-of-delivery mark is at start of delivery of cylinder 1

\* Read off speed set under 1. Add 27...40 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

Test sheet Edition

t : MB 6,1 B 2 : 30.11.90

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 100

Injection pump

Pump designation : PES6MW100/720RS1131-

1

EP type number : 0 413 406 165

Governor

Governor désign. : RSV350...1300MW0A342

-3

Governer no. : 0 420 085 162

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 157.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.0...7.5
Del.quantity cm3/: 1.0...1.2

100 s: (0.6...1.5)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300

Aneroid pressure h: 1000 Del.quantity : 102.0...1

Del.quantity : 102.0...104.0 1000 : (100.0...106.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.20

rpm : 1340...1345 \* Speed 2nd rack travel in: 4.00 rpm : 1390...1403 Speed 3rd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 rpm : 0.30...1.70 Speed 5th rack travel in: 1340...1350 rpm : 12.20 Speed LOW IDLE 1 Setting point w/out bumper spring mom : 350 Speed Rack travel in mm: 7.2 Testing: : 100 Speed COM Minimum rack trave: 19.00 rpm : 350 Rack travel in mm : 7.00...7.50 Rack travel in mm : 2.00 rom : 480...540 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 190 Pressure : 11.00...11.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.20...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed : 600 **LDW** Del.quantity cm3/: 89.0...92.0 1000 s: (86.5...94.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -: 500 Speed **LDW** Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0)

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed : 350 rpm Rack travel in mm : 7.00...7.50 Del.quantity cm3/: 10.0...12.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 50...63 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

BREAKAWAY

Note remarks

: MB 6,1 B 3 : 20.12.90 Test sheet Edition

Replaces Test oil : ISO-4113

Combination no. : 0 403 476 101

Injection pump

: PES6MW100/720RS1131-Pump designation

EP type number : 0 413 406 165

Governor

: RSV350...1300MW0A342 Governor design.

: 0 420 085 163 Governer no.

Customer-spec. information : MB-NFZ Customer

: OM 366 LA Engine

1st version kW : 125.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

Del.quantity : (7.0....81.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Aneroid pressure h: 1000 : 800 Testina: Speed rpm Del.quantity cm3/: 71.0...74.0 1st rack travel in: 10.30 rpm : 1340...1345 \* 1000 s: (68.5...76.5) Speed cm3 : 5.00 2nd rack travel in: 4.00 Spread : 1390...1403 1000 s: (7.0) Speed rom Aneroid pressure h: 1000 3rd rack travel in: 4.00 rpm : 1410...1440 rpm : 600 Speed Del.quantity cm3/: 64.0...67.0 4th rack travel in: 1550 1000 s: (61.5...69.5) rpm : 0.30...1.70Speed 5th rack travel in: 1340...1350 Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 36.0...38.0
1000 s: (34.0...40.0) rpm : 10.20 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.2 **BREAKAWAY** 1st version Testina: 1mm rack travel less than rom : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.00...7.50 full load rack tr: 9.30 rpm : 1340...1345 Speed Rack travel in mm : 2.00 : 480...540 STARTING FUEL DELIVERY Speed rom TORQUE CONTROL Dimension a mm : 0.90: 100 Speed rom Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 11.30...11.40 2nd speed rpm: 800 LOW IDLE Rack travel in m: 11.80...12.00 Speed rpm : 350 Rack travel in mm : 7.00...7.50 3rd speed rpm : 600 Rack travel in m: 12.20...12.30 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Aneroid/Altitude cm3 : 3.50 Spread Compensator Test 1000 s: (5.50) 1st version Remarks: Setting \* Read off speed set under 1. : 500 Speed rom hPa : 190 Add 50...63 min-1 to this speed. The Pressure control-rod travel under 2. must be : 11.00...11.10 Rack travel mm attained with the calculated speed profile. Measurement  $1/\min : 500$ Speed Test hydr. locking device for starting with 500...1000 hPa air pressure. 1st pressure hPa : -Rack travel in m: 10.60...10.70 2nd pressure hPa : 300 Rack travel in m: 11.70...12.00 Check pneumatic shutoff device at 3.0 3rd pressure hPa : 1000 bar air pressure Rack travel in m: 12.30...12.40 FUEL DELIVERY CHARACTERISTICS

M18

1st version

Note remarks

Test sheet : MAN 7,3 B
Edition : 05.11.90
Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 486 103

Injection pump

Pump designation : PES6MW100/321RS1208

EP type number : 0 413 406 199

Governor

Governor design. : RSV300...1100MW0A802

-2

Governer no. : 0 420 085 156

Customer—spec. information Customer : MAN

Engine : D0826LE 10

1st version kW : 165.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 13.6...13.8

100 s: (13.4...14.0)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 136.0...138.0 1000 : (134.0...140.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00

rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.0 Testing: Speed : 100 rom Minimum rack trave: 19.00 Speed rpm : 300 Rack travel in mm : 5.90...6.10 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed man Del.quantity cm3/: 135.5...138.5 1000 s: (133.0...141.0) cm3 : 5.00Spread 1000 s: (7.0) : 800 Speed mon Del.quantity cm3/: 141.5...144.5 1000 s: (139.0...147.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1150...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 11.0...15.0 1000 s: (8.5...17.5) cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

: MAN #3-7103

Start-of-delivery mark is at start of delivery of cylinder 1

M<sub>2</sub>0

Note remarks

: STE 6,5 F Test sheet

: 05.10.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 546 020

Injection pump

Pump designation : PE6MW100/720RS1157

: 0 413 506 103 EP type number

Governor

Governor design. : RQ250/1200MW94-2 : 0 420 082 047 Governer no.

Customer-spec. information Customer : SNF

Engine : WD 612.66

: 165.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 13.8...14.0

100 s: (13.6...14.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travet in mm: 5.8...6.0 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1320 1st speed

: 8.90...9.30 travel mm

: 1250 2nd speed rpm

: 6.20...6.40 travel mm

: 375 3rd speed rpm travel mm

: 4.00...4.60

: 250 4th speed rpm : 1.50...1.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 96 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 900

: 138.0...140.0 Del.quantity 1000 : (136.0...142.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Aneroid pressure h: 900 : 700 Control lever Speed rpm Del.quantity cm3/: 137.0...141.0 1000 s: (135.0...143.0) Spread cm3: 5.00 position degrees: 98...106 Setting point: 1000 s: (7.0) : 600 Speed rpm Rack travel in mm: 20.0 Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 82.0...84.0 1000 s: (80.0...86.0) Testing: 1st rack travel in: 12.80 Speed rpm : 1235...1250 2nd rack travel in: 4.00 rpm : 1300...1330 **BREAKAWAY** Speed 4th rack travel in: 1400 rom : 0.00...1.00 1st version Speed 1mm rack travel less than LOW IDLE 1 full load rack tr: 12.80 Control lever rpm : 1235...1250 position degrees: 72...80 Speed Setting point w/out bumper spring Speed rpm : 250 STARTING FUEL DELIVERY Rack travel in mm: 5.9 rpm : 100 Testing: Speed Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) : 150 Speed rpm -Minimum rack trave: 7.50 rpm : 250 Speed Rack travel in mm : 5.80...6.00 LOW IDLE CONSTANT REGULATION Speed rpm : 250 Rack travel in mm : 5.80...6.00 rpm : 260...400 Speed Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 Aneroid/Altitude Compensator Test 1000 s: (5.50) 1st version Remarks: Setting Speed : 500 rpm hPa : 400 Pressure Rack travel mm : 11.50...11.60 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 660 Rack travel in m: 13.10...13.40 3rd pressure hPa : 900 Rack travel in m: 13.80...13.90 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Note remarks

: KHD 13,4 F Test sheet : 21.09.90 : 28.11.88 Edition Replaces Test oil : ISO-4113

Combination no. : 0 403 548 027

Injection pump

Pump designation : PE8MW100/720LS1173

EP type number : 0 413 508 108

Governor

Governor design. : RQV300...1150MW99

: 0 420 083 163 Governer no.

Customer-spec. information Customer : KHD

: F8L513 Engine

1st version kW : 188.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 740 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.10...3.20 Prestroke mm

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

: 1-8-7-2-6-5-Firing order 4- 3

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1280 1st speed

: 11.10...11.50 travel mm

: 1190 2nd speed rom

: 10.10...10.30 travel mm

3rd speed man : 400

travel mm : 2.90...3.50

4th speed rom

: 300 : 2.20...2.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1200 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 103.0...105.0 Del.quantity 1000 : (101.0...107.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 45...53 Testina: 1st rack travel in: 10.20 Speed rpm : 1190...1200 2nd rack travel in: 4.90 rpm : 1290...1320 Speed 4th rack travel in: 1370 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 13...21 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 5.1 Testina: Speed rpm: 100 Minimum rack trave: 7.00 rpm : 300 Speed Rack travel in mm : 5.00...5.20 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1:50 Rack travel in m: 11.20...11.30 2nd speed nom : 650 Rack travel in m: 11.80...11.90 3rd speed rpm : 900 Rack travel in m: 11.50...11.70 START CUT-OUT Speed 1/min : 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 650 Speed Del.quantity cm3/: 105.5...108.5 1000 s: (103.0...111.0) cm3 : 5.00 Spread 1000 s: (7.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

Speed rpm: 300
Rack travel in mm: 5.00...5.20
Del.quantity cm3/: 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3: 3.50
1000 s: (5.50)

Remarks:

Note remarks

: MB 6,0 g 2 : 24,11.89 Test sheet Edition : 15.8.89 Replaces Test oil : ISO-4113

: 9 400 085 310 Combination no.

Injection pump

Pump designation : PES6A95D41ORS2772 : 9 400 084 018 EP type number

Governor

: RQV300...1300AB1066-Governor design.

: 9 420 080 279 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M 366 LA Engine

1st version kW : 155.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.08)

: 1 Time to cyl. no.

BASIC SETTING

rom : 13001st speed

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 0.80...1.30 travel mm

: 500 2nd speed rom

travel mm : 2.30...2.80 : 750 3rd speed rpm

: 4.10...4.30 travel mm

: 1500 4th speed rpm : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : yb.u...102.0)

: 3.50 Spread cm3

1000 : (6.00) RATED SPEED

1st version

Control lever

position degrees: 55...63

Testina:

1st rack travel in: 10.10

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

rpm : 1470...1500 Speed

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 12...20

Testing:

rpm : 100 Speed

Minimum rack trave: 8.00 rpm : 300

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 420...550

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 700 Pressure

Rack travel mm : 11.10...11.20

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.60...10.70

3rd pressure hPa : 300

Rack travel in m: 9.90...10.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

M26

Aneroid pressure h: 700

rpm : 700 Speed

Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 59.5...61.5

1000 s: (57.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1340...1350

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 95.0...115.0 1000 s: (-)

Rack travel in mm : 14.50...14.70

Remarks:

Note remarks

: FOR 6,6 k 1 Test sheet : 26.03.90 Edition

Replaces

Test oil : ISO-4113

: 9 400 085 312 Combination no.

Injection pump

Pump designation : PES6A95D41ORS2742 EP type number : 9 400 084 011

Governor

Governor design. : RQV350...1300AB1220-

: 9 420 080 280 Governer no.

Customer—spec. information

Customer : FNH

: 6.6 1 Engine

: 139.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

rum : 1367 1st speed

Rack travel in mm . 13.20...13.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.2...6.3 Del.quantity cm3/ : 1.5...2.1

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 8.50...8.60 : 350 travel mm

2nd speed rpm

: 1.10...1.80 travel mm

3rd speed : 500 rpm

: 2.70...3.10 : 700 travel mm 4th speed

rpm : 3.50...3.90 travel mm

: 1000 5th speed rpm

travel mm : 4.90...5.30

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1540 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 900 Del.quantity : 101.5...103.5 1000 : (99.0...106.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st worsign Constal lever position degrees: 111...119 Testing: 1st rack travel in: 12.20 rpm . 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1490...1520 Coeed 4th rack travel in: 1630 Speed rom : 0.00...1.00 LOW TOLE 1 Control lever position degrees: 65...73 Testing: Speed rpm : 100 Minimum rack trave: 9.00 rpm : 350 Rack travel in mm : 6.20...6.40 CONSTANT REGULATION rpm : 370...440 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 900 : 13.20...13.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 380

Rack travel in m: 11.00...11.30 3rd pressure hPa : 530 Rack travel in m: 12.80...12.90 START CUT-OUT 1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 800 Speed

Del.quantity cm3/: 99.5...103.5 1000 s: (97.5...105.5)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 65.5...67.5 1000 s: (63.0...70.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (152.0...178.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.20...6.30 Del.quantity cm3/: 15.0...21.0 1000 s: (13.5...22.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Set shureff stop 1.5...2.0 mm before shutoff.

### Note remarks

: FOR 7,8 i 1 Test sheet : 24.10.90 Edition Replaces : 3.7.90 : ISO-4113 Test oil

: 9 400 087 417 Combination no.

Injection pump

Pump designation : PES6P120A720RS3234 : 9 400 087 068 EP type number

Governor

Governor design. : RQV350...1150PA923K

: 9 420 080 272 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 7.8 Ltr Engine

: 141.7 1st version kW : 2300 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.35...2.45 : (2.30...2.50)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.5

Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 9.50...9.70

: 1000 2nd speed rpm

travel mm : 7.80...8.00

rpm : 800 3rd speed

: 6.40...6.80 travel mm

rpm : 450 4th speed

: 3.50...3.70 travel mm

: 350 5th speed rom

: 2.00...2.30 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 156.5...158.5 1000 : (153.5...161.5)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testina:

1st rack travel in: 12.10

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1420

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 62...70

Testing:

Speed rpm : 275 Minimum rack trave: 7.20

Speed rpm : 350 Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 390...460 Speed

TORGUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 13.10...13.20

2nd speed rpm : 750

Rack travel in m: 12.00...12.20

3rd speed rpm : 550

Rack travel in m: 10.80...11.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1150 Speed rpm hPa : 900 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 1150 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.80

2nd pressure hPa : 200
Rack travel in m: 9.30...9.40

3rd pressure hPa : 440

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 750
Del.quantity cm3/ : 165.0...171.0
1000 s: (162.0...174.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...200.0 1000 s: (156.0...204.0)

Rack travel in mm : 11.60...12.40

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 26.5...32.5 1000 s: (24.5...34.5)

cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : VOL 10,0q15 Edition : 24.10.90

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 437

Injection pump

Pump designation : PE6P110A320RS3108Y

EP type number : 0 411 816 729

Governor

Governor design. : RQV250...1100PA589-3

: 9 420 080 288 Governer no.

Customer-spec. information Customer : VOLVO

Engine : THD 100 EC

: 180.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.2...5.4 Del.guantity cm3/: 3.0...3.4 100 s: (2.7...3.6)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.20...1.30 travel mm

370 2nd speed rpm :

: 2.60...3.00 travel mm

3rd speed rpm : 430

: 3.50...3.90 travel mm

rpm : 1160 4th speed

travel mm : 8.10...8.30

5th speed : 1210 rom

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Dearee: -1

rpm : 1180

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 130.0...143.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

: 100 Speed rom Minimum rack trave: 6.70 : 250 rpm

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 900 Pressure

: 11.10...11.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 275

Rack travel in m: 9.90...10.00

3rd pressure hPa : 400

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 105.5...108.5

1000 s: (103.0...111.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 30.0...34.0 1000 s: (27.5...36.5) Spread cm3: 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

**Omnibus** 

Note remarks

: VOL 10,0q16 : 24.10.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 9 400 087 438 Combination no.

Injection pump

Pump designation : PE6P110A320RS3108X

: 0 411 816 730 EP type number

Governor

Governor design. : RQV250...1100PA589-3

: 9 420 080 288 Governer no.

Customer-spec. information : VOLVO Customer

: THD100 ED Engine

: 203.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6) cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 250 : 1.10...1.30 travel mm

rpm : 500 2nd speed

: 4.10...4.90 travel mm

3rd speed rpm : 700

: 6.30...6.70 rpm : 950 travel mm

4th speed

: 6.30...6.70 rpm : 1100 travel mm

5th speed

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 160.0...162.0 1000 : (157.0...165.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 11.10

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 8...16

Testina:

: 100 Speed rpm Minimum rack trave: 6.70 rpm : 250 Speed

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version -

Setting

: 500 Speed rom Pressure hPa : 900

: 12.10...12.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 275 Rack travel in m: 9.60...9.70

3rd pressure hPa : 650

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 105.5...108.5 1000 s: (103.0...111.0)

**BREAKAWAY** 

ist version 1mm rack travel less than

full load rack tr: 11.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 250
Rack travel in mm: 5.00...5.20
Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 10,0q17 : 24.10.90 Test sheet Edition Replaces Test oil : ISO-4113 : 9 400 087 439 Combination no. Injection pump Pump designation : PE6P110A320RS3108Z EP type number : 0 411 816 728 Governor Governor design. : RQV250...1100PA589-3 : 9 420 080 288 Governer no. Customer-spec. information Customer : VOLVO : THD 101 GB Engine : 160.0 1st version kW Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | : 172...175 pressure, bar : 1 680 750 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Test lines per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rom : 700Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 12.2...12.4 100 s: (11.9...12.7) cm3 : 0.4Spread 100 s: (0.7) rpm : 250.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 3.0...3.4 100 s: (2.7...3.6) cm3 : 0.3Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.10...1.30 travel mm : 500 2nd speed rom : 4.10...4.90 travel mm 3rd speed rpm : 700 : 6.30...6.70 travel mm rpm : 950 4th speed : 6.30...-6.70 travel mm rpm : 1100 5th speed : 7.00...7.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 750 Del.quantity : 122.0...27.0)

cm3 : 4.00Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 9.50

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

: 100 Speed rpm Minimum rack trave: 6.80 rpm : 250 Speed

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00

: 350...410 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 750

Rack travel mm : 10.50...10.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 265

Rack travel in m: 9.90...10.00 3rd pressure hPa : 310 Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 105.5...108.5 1000 s: (103.0...111.0)

BREAKAWAY

N08

1st version

1mm rack travel less than

full load rack tr: 9.50

rbm : 1160...1170 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...190.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

**Omnibus** 

Note remarks

Test sheet : SCA 11,0 y4

Edition : 24.10.90

Replaces

Test oil : ISO-4113

: 9 400 087 440 Combination no.

Injection pump

Pump designation : PE6P110A720RS3115-1

EP type number : 0 411 816 764

Governor

Governor design. : RQV250...1100PA468

: 0 421 813 225 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

Engine : DN 11-08

: 158.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40

: (3.25...3.45)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 11.2...11.4

100 s: (11.0...11.6)

cm3 : 0.5Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 4.5...4.8 Del.guantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.2 Spread 100 s: (0.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 : 1.20...1.60 1st speed travel mm

350 2nd speed rpm : 2.40...3.00 travel mm

3rd speed rpm : 650

travel mm : 4.60...5.20

4th speed rpm

travel mm

: 1145 : 8.60...8.80 travel mm

5th speed rom

: 1255 : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 112.0...114.0 Del.guantity

1000 : (110.0...116.0)

Spread : 5.00 cm3

1000 : (7.00)

N<sub>0</sub>9

## RATED SPEED

1st version Control Lever

position degrees: 113...121

Testina:

1st rack travel in: 10.70

Speed rpm: 1140...1150
2nd rack travel in: 4.00
Speed rpm: 1240...1270
4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 62...70

Testing:

Speed : 100 rpm Minimum rack trave: 6.10 rpm : 250 Speed

Rack travel in mm : 4.50...4.70

Rack travel in mm: 2.00

: 360...420 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del.quantity cm3/: 113.5...118.5 1000 s: (111.0...121.0)

#### **BREAKAWAY**

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...290.0 1000 s: (236.0...294.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm.

Start-of-delivery setting with ROBO diaphragm.

N10

: 4.25...4.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (4.20...4.30) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firina order Test sheet : FOR 7,8 n Edition : 24.10.90 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasing : 9 400 087 441 Tolerance + - ° : 0.50 (0.75) Combination no. Injection pump Time to cyl. no. : 1 Pump designation : PES6P110A720RS3267 : 9 400 087 072 EP type number BASIC SETTING Governor rpm : 1200Governor design. : RSV650...1250P8A528 1st speed : 9 420 082 323 Göverner no. Rack travel in mm : 13.20...13.30 Customer-spec. information Del.quantity cm3/: 13.2...13.4 Customer ; FORD FNH 100 s: (13.0...13.6) : 7.8 L Engine cm3 : 0.51st version kW : 140.0 Spread Rated speed : 2500 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 650.0 2nd speed Rack travel in mm: 5.9...6.1 Test oil Del.quantity cm3/: 0.8...1.2 inlet temp. °C : 38...42 100 s: (0.5...1.5) cm3 : 0.3Overflow valve Spread 100 s: (0.5) : 9 401 087 403 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -3 : 1 688 901 017 rpm : 800 assembly Speed Rack travel in mm : 0.30...1.00 **Opening** : 207...210 Governor spring pre-tension Click setting x : 3.25 pressure, bar Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Test lines : 1 680 750 015 Speed Del.quantity : 132.0...134.0 1000 : (130.0...136.0) Outside diameter cm3 : 5.00 1000 : (9.00) x Wall thickness Spread : 6.00x1.50x600 x Length mm (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version Control lever per values \_\_\_\_ position degrees: 99...107 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 12.20

rpm : 1260...1270 Speed 2nd rack travel in: 4.00 Speed rpm : 1300...1320 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring rpm : 650 Speed Rack travel in mm: 6.0 Testing: : 600 Speed L.DW Minimum rack trave: 10.00 Speed rpm : 650 Rack travel in mm: 5.40...5.60 Rack travel in mm: 2.00 : 685...745 Speed rpm FUEL DELIVERY CHARACTERISTICS 1st version Speed : 800 rpm Del.quantity cm3/: 110.0...114.0 1000 s: (108.0...116.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1260...1270 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm: 20.00...21.00 LOW IDLE rpm : 650 Speed Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 8.0...12.0 1000 s: (5.5...15.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks: **APPLICATION** 

Combine-harvester

Note remarks

Test sheet : FOR 7,8 n 1 Edition : 24.10.90

Replaces

: ISO-4113 Test oil

: 9 400 087 442 Combination no.

Injection pump

Pump designation : PES6P110A72ORS3267

EP type number : 9 400 087 072

Governor

Governor design. : RSV650...1250P8A530-

: 9 420 082 324 Governer no.

Customer-spec. information

Customer : FORD - FNH

Engine : 7.8 1

1st version kW : 165.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35 : (4.20...4.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack tray. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rom: 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 13.7...13.9

100 s: (13.5...14.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 1000 Del.quantity : 137.0...141.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 99...107

Testina:

1st rack travel in: 12.50

rpm : 1260...1270 Speed

2nd rack travel in: 4.00

Speed rpm : 1300...1320 4th rack travel in: 1400

rpm : 0.30...1.70Speed

LOW IDLE 1

Control Lever

position degrees: 73...81

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm: 6.0

Testina:

: 600 Speed rpm

Minimum rack trave: 10.00 : 650 Speed rom

Rack travel in mm : 5.90...6.10

Rack travel in mm: 2.00

Speed : 685...745 וחסרו

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1200 Speed man

hPa : 1000 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min: 1200 Speed

1st pressure hPa : Rack travel in m: 9.90...10.00

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60

3rd pressure hPa : 400

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 800 Speed

Del.quantity cm3/: 117.5...119.5 1000 s: (115.5...121.5)

Aneroid pressure h: -

Speed rpm : 1200 Del.quantity cm3/: 79.0...81.0 1000 s: (77.0...83.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 135.0...155.0

1000 s: (131.0...159.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650 Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : FOR 7,8 n 2 : 24.10.90 Edition Replaces Test oil : ISO-4113 : 9 400 087 443 Combination no. Injection pump Pump designation : PES6P11CA72ORS3267 EP type number : 9 400 087 072 Governor Governor design. : RSV650...1250P8A530 : 9 420 082 325 Governer no. Customer-spec. information : FORD -FNH Customer Engine : 7.8 l : 180.0 1st version kW : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 : 9 401 087 403 Test nozzle holder : 1 688 901 017 assembly : 207...210 pressure, bar diameter mm : 0,6 : 1 680 750 015 : 6.00x1.50x600

Overflow valve Inlet press., bar: 1.50 **Opening** Orifice plate Test lines Outside diameter x Wall thickness x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.25...4.35 Prestroke mm : (4.20...4.40) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 2.00...3.00 BASIC SETTING rpm: 1200 1st speed Rack travel in mm : 14.60...14.70 Del.quantity cm3/: 15.5...15.7 100 s: (15.3...15.9) cm3 : 0.5Spread 100 s: (0.9) rpm : 650.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-Lever position Dearee: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Aneroid pressure h: 1000 Del.quantity : (153.0...159.0) : 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 13.60

rpm : 1260...1270 Speed

2nd rack travel in: 4.00

: 1305...1325 Speed rpm

4th rack travel in: 1400

rpm : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 72...80

Setting point w/out bumper spring

: 650 rpm Rack travel in mm: 6.0

Testing:

Speed CDM Minimum rack trave: 10.00 : 650 Speed rpm

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

Speed rom : 685...745

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 1200 Pressure hPa : 1000

Rack travel mm : 14.60...14.70

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 11.50...11.60

2nd pressure hPa : 600

Rack travel in m: 14.00...14.10

3rd pressure hPa : 400

Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 800 Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0)

Aneroid pressure h: -

: 1200 Speed rom

Del.quantity cm3/: 107.0...109.0

1000 s: (105.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 650

Rack travel in mm: 5.90...6.10 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

APPLICATION

Combine-harvester

Note remarks

: FOR 7,8 o : 24.10.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 9 400 087 444 Combination no.

Injection pump

Pump designation : PES6P110A720RS3268

: 9 400 087 073 EP type number

Governor

Governor design. : RSV650...1250P8A530-

: 9 420 082 327 Governer no.

Customer-spec. information

Customer : FORD (FNH)

: 7.8 1 Engine

: 190.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.25...4.35 : (4.20...4.40) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference °CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 16.2...16.4

100 s: (16.0...16.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm : 6.5...6.7 Del.quantity cm3/ : 2.2...2.6

100 s: (2.0...2.9)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 1000

Del.quantity : 102.0...166.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED 1st version Control lever position degrees: 98...106 Testing: 1st rack travel in: 11.10 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1295...1315 Speed 3rd rack travel in: 4.00 rpm : 1310...1330 Speed 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 73...81 Setting point w/out bumper spring rpm : 650 Rack travel in mm: 6.1 Speed : 650 rpm Rack travel in mm : 6.00...6.20 Rack travel in mm : 2.00 Speed man. : 690...750 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1200 rpm Pressure hPa : 1000 Rack travel mm : 12.10...12.20 Measurement 1/min: 1200 Speed 1st pressure hPa : -Rack travel in m: 9.20...9.30 2nd pressure hPa : 400 Rack travel in m: 9.70...9.80 3rd pressure hPa : 600 Rack travel in m: 11.40...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 67.5...69.5 1000 s: (65.5...71.5) BREAKAWAY

1mm rack travel less than full load rack tr: 11.10 rpm : 1260...1270 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...170.0 1000 s: (136.0...174.0) Rack travel in mm: 20.00...21.00 LOW IDLE Speed : 650 rpm Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 22.5...26.5 1000 s: (20.0...29.0) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: APPLICATION Combine-harvester

N18

1st version

Note remarks

Test sheet : FOR 6,6 o 2 Edition : 24.10.90

Replaces

Test oil : ISO-4113

Combination no. **:** 9 400 087 452

Injection pump

Pump designation : PES6P100A720RS3235 : 9 400 087 067

EP type number

Governor

: RQV350...1275PA923-6 Governor design.

: 9 420 080 301 Governer no.

Customer-spec. information

: FORD (FNH) Customer

Engine : 6.6 L

1st version kW : 123.0 Rated speed : 2550

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 1275 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 14.3...14.5

100 s: (14.0...14.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 1st speed

: 9.20...9.40 travel mm

2nd speed rpm : 600

: 4.80...5.10 travel mm

3rd speed rpm : 450

: 3.60...3.90 rpm : 350 : 2.00...2.20 travel mm

4th speed

travel mm

: 275 5th speed rpm

: 0.70...1.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1275 Speed Aneroid pressure h: 1200

: 143.0...\$5.0 Del.quantity

1000 : (140.0...148.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 13.80 Speed rpm: 1335...1345 2nd rack travel in: 4.00 rpm : 1485...1515 Speed 4th rack travel in: 1600 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 63...71 Testing: Speed rpm Minimum rack trave: 8.50 Speed : 350 Rack travel in mm : 6.50...6.70 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version rpm : 1275 1st speed Rack travel in m: 14.80...14.90 rpm : 850 2nd speed Rack travel in m: 12.80...13.00 3rd speed rpm : 550 Rack travel in m: 11.50...11.90 Aneroid/Altitude Compensator Test 1st version Setting : 1275 Speed rpm hPa : 1200 Pressure : 14.80...14.90 Rack travel mm

Measurement 1/min: 1275 Speed 1st pressure hPa : -

Rack travel in m: 9.30...9.70 2nd pressure hPa : 375 Rack travel in m: 10.90...11.00 3rd pressure hPa : 715

Rack travel in m: 13.50...13.90

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 850 Speed rpm

Del.quantity cm3/: 132.0...138.0 1000 s: (129.0...141.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.80

rpm : 1335...1345 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0)

Rack travel in mm : 13.10...13.90

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 14.0...20.0 1000 s: (12.0...22.0) Spread cm3: 5.00

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : CUM 8,3 a18 : 28.09.89 Test sheet Edition Replaces Test oil : ISO-4113 : 9 400 230 109 Combination no. Injection pump Pump designation: PES6A100D320/3RS2691 EP type number : 9 410 230 030 Governor : RSV450...1100A0C2190 Governor design. -41R : 0 420 233 247 Governer no. Customer-spec. information Customer : C.D.C. Engine : 6CT830 : 117.1 1st version kW Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 017 assembly **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0.6 : 1 680 750 014 Test lines Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Phasing Phasing Tolerance + - ° BASIC SETTING 1st speed Spread 2nd speed Spread Speed 1st version Del.quantity Spread cm3 RATED SPEED 1st version Control lever Testing:

Test pressure, bar: 27...29 Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 : 0.50 (0.75) Time to cyl. no. : 1 rpm: 1100 Rack travel in mm : 10.20...10.30 Del.quantity cm3/: 8.9...9.1 100 s: (8.7...9.3) cm3 : 0.4100 s: (0.6) rpm : 450.0 Rack travel in mm: 5.7...5.9 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : ? FULL LOAD DELIV. AT FULL LOAD STOP : 89.0...91.0 1000 : (87.0...93.0) : 4.00 1000 : (6.50) position degrees: 47...55

1st rack travel in: 9.20 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 3rd rack travel in: 4.00 Speed rpm: 1195...1225 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 29...37 Setting point w/out bumper spring Speed rpm : 450 Rack travel in mm : 5.3 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 450 Rack travel in mm : 5.70...5.90 Rack travel in mm: 2.00 rpm : 525...585 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.20...10.30 2nd speed rpm : 750 Rack travel in m: 10.80...11.00 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 90.5...94.5 1000 s: (88.5...96.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.20 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450 Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

Set shutoff solenoid 0.5...1.5 mm before shutoff.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

N22

Note remarks

: MB 5,7 v 23 : 7.1.91 Test sheet

Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 407 083 269

Injection pump

Pump designation : PES6A90D410RS2596

EP type number : 0 410 896 073

Governor

Governor design. : RQV300...1400AB1146L

: 9 420 080 152 Governer no.

Customer-spec. information

: MERCEDES-BENZ-BRASIL Customer

Engine : OM 352A

1st version kW : 126.5 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4

Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 300 2nd speed

Rack travel in mm : 8.90...9.10 Del.quantity cm3/: 1.3...1.7

100 s: (1.1...1.9)

cm3 : 0.25 Spread 100 s: (0.45)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Aneroid pressure h: 526

Del.quantity : 81.0...84.0)

: 3.0 cm3 Spread

1000 : (5.0)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testina:

1st rack travel in: 11.85

rpm : 1440...1450 Speed

2nd rack travel in: 4.00

Speed rpm : 1585...1615 4th rack travel in: 1800

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 12...20

Testina:

rpm : 100 Speed Minimum rack trave: 10.50

Speed rpm : 300
Rack travel in mm : 8.90...9.10
Rack travel in mm : 2.00
Speed rpm : 740...800

CONSTANT REGULATION

rpm : 400...470 Speed

TORQUE CONTROL

Dimension a mm : 1.05

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in #: 12.80...12.90

2nd speed rpm : 500

Rack travel in m: 13.85...13.95

3rd speed rpm : 1050

Rack travel in m: 13.50...13.70

4th speed rpm : 1225 Rack travel in m: 12.90...13.20

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 Speed hPa : 526.3 Pressure

: 13.85...13.95 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.55...12.65

2nd pressure hPa : 329

Rack travel in m: 13.55...13.65

3rd pressure hPa : 230.2

Rack travel in m: 12.55...12.85

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 526.3 Speed rpm : 500 Del.quantity cm3/: 76.5...78.5 1000 s: (73.5...79.5)

Aneroid pressure h: -: 500 Speed rom

Del.quantity cm3/: 62.0...64.0

1000 s: (60.0...66.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.85

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 73.0...83.0 1000 s: (73.0...83.0)

Rack travel in mm : 14.80...15.20

Remarks: